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ENGINEERS FOR NAPHTHA LAUNCHES.

A senseless measure has been introduced in the house of representatives at Washington by Congressman Grosvenor and unless there is concerted action against it it is likely to pass. It is a measure which aims a direct blow against a considerable maritime industry. Of late years the motor boat has grown in favor until it is now estimated that there are 1,300 separate motor-boat building establishments in the country. The Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, Morris Heights, N. Y., who were the first to build the naphtha launch in this country, have turned out 1,400 of them. Ever since the building of these boats began efforts have been repeatedly made to bring them under the regulations governing steam craft notwithstanding the fact that there is practically no point of comparison between the service performed by steam craft and that to which the gasoline launch is adapted. In 1897 a bill was finally passed requiring all vessels of 15 tons burden and over, carrying freight and passengers for hire, to come under the steamboat laws as regards inspection, licensed engineers, etc., and also requiring all vessels propelled by gas, fluid, naphtha or electric motors to comply with the rules of the road and the law relating to lights and fog signals. This apparently covered the necessities of the case so far as ordinary pleasure boating was concerned, and also for small traffic boats, which are usually operated by their owners with the care and intelligence that an owner would give to his own life and property.

In 1900 a bill was introduced to amend the act of 1897 by striking out the words "of above 15 tons burden." It was defeated. But now Representative Grosvenor has revamped the subject by introducing at the present session of congress a bill which reads as follows: "All vessels carrying freight or passengers for hire, propelled by gas, fluid, naphtha or electric motors, shall be, and are hereby made subject to all the provisions of section 4426 of the revised statutes of the United States relating to the inspection of hulls and boilers, and requiring engineers and pilots; and all vessels so propelled, without regard to tonnage or use, shall be subject to the provisions of section 4412 of the revised statutes of the United States relating to the regulation of steam vessels in passing each other, and to so much of sections 4233 and 4234 of the revised statutes relating to lights, fog signals, steering and sailing rules as the board of supervising inspectors shall by their regulations deem applicable and practicable for their safe navigation."

There is absolutely no need of the passage of that act. The present act offers safeguards sufficient and it is probably an entering wedge for a further amendment to strike out the words "carrying freight and passengers for hire." This bill is a direct infringement on personal rights. Its primary purpose is to compel every owner of a gasoline launch to employ an engineer. Of course thousands of them cannot employ engineers because they have not the means to do so. Its passage would simply mean that they would have to sell their boats. Take another phase of the situation. In the various harbors and sheltered waterways of the country, especially in great lakes harbors, supplies are delivered to vessels by the supply houses in gasoline launches. This service was formerly performed by row boats. It can at once be seen what a labor-saving advantage the power launch has over the row boat for this work. It is speedier, safer and more easily handled—and yet under the provisions of the Grosvenor bill the supply houses would have to employ a licensed engineer to operate this little launch. The thing is absurd. There is no more reason why a man should have to be licensed to run one of these little motor launches than he should be to row a boat. The operation of running a launch requires less skill than to row a boat. Moreover the chances of accident or break-down to a launch are much less than to a row boat. Boat builders have not been idle these past twenty years. The gasoline and motor launch have been so developed and so refined that there is practically nothing to get out of order about them. It is to the very fact that the law requires the steam launch to carry a licensed officer that the motor boat has reached such great development. Inventors and builders turned their attention to the development of a craft that the owner might with safety run himself. They have succeeded in producing such a vessel and have broadened the horizon of personal pleasures. What finer sport is there than managing one's own craft when one can do it with perfect safety and with perfect regard for the rights of others. Yet the Grosvenor bill would step in and take this pleasure from a considerable portion of the community. This is a bill which seeks to curtail personal liberty without safeguarding the public in any degree whatever. It is merely legislation along the line of getting everything possible into governmental control in order that more government positions may be created. There is no disguising the fact that it is an attempt to put the authority of the United States government back of a labor union. The animating influence behind this measure is undoubtedly exerted

by societies of pilots and engineers for the sole purpose of creating additional places for themselves. There are vessels, indeed, which need the services of competent pilots and engineers but they are not motor boats and gasoline launches; and it isn't likely that a competent engineer or pilot would accept such a position. Is it not therefore a natural conclusion that the measure is designed to benefit those members whose inability or whose habits unfit them for responsible positions?

Automobiles are propelled by the same type of motor that propels the motor boat. Why not demand like jurisdiction for them? Why not require an automobile to carry a licensed engineer? Everyone would realize at once the absurdity of a measure to employ engineers on automobiles and yet it is no more absurd than the present one. Indeed there is really more reason why an automobile should be handled by an engineer than that a motor boat should for the automobile operates in crowded districts and has a greater potentiality for mischief than a motor boat has. As to motor boats being inspected by United States inspectors how would they begin to inspect a bit of machinery which had no water in its boiler on which to get a pressure, or, in fact, which had no boiler at all?

The Grosvenor bill is being vigorously pushed by the licensed officers of the west who have, ever since these useful craft began to navigate the western rivers, looked enviously upon them as a source from which they might derive revenue. A body of men, no matter how small, working continuously and insistently to a common end will accomplish wonders. Unless the efforts of these men are checkmated by interests opposed to the bill it is likely to slip through both houses. It behooves the makers and users of gasoline launches and motor boats to exert themselves to defeat this measure.

LIGHTHOUSE ON DIAMOND SHOALS.

The Frye bill, passed by the senate and now before the house of representatives, for a lighthouse off Hatteras is part of an interesting chapter in the eventful history of the United States coastwise light. Albert F. Eels of Boston, a native of Maine, is authorized by this bill to construct at his own expense a lighthouse and fog signal at outer Diamond shoal, off the North Carolina coast. One year after the acceptance of the structure, if it is still in good condition, the government is to pay \$300,000, and after a second year of service \$575,000 additional. The proposed location of the light is one of the most dangerous points on the entire coast, and is known by fame the world over as a graveyard of ships. Lying as it does between the regions of tropical storms and of North Atlantic storms, the winds reach velocities of 90, 95, and sometimes 100 miles per hour, and the seas run so high that it is stated that even if the Diamond shoal light be 200 ft. above sea level, it would, part of the time, be obscured by the spray. Between 1875 and 1902 the records of the life-saving service show that there were ninety-seven wrecks at this point, with total losses of \$3,000,000 and sixty-two lives. Of these eighteen were on outer Diamond shoal and nine on inner Diamond shoal.

The latest attempt to build a lighthouse at this important point was in 1889, when a contract was given to Anderson & Barr of Pittsburgh. An enormous caisson was constructed and preparations were made for putting it in place and filling in the masonry and concrete in the shortest possible time. In a period of calm weather an effort was made to do this, but a sudden storm carried the work away. As in the famous cases of the Minot's Ledge and Eddystone lights, it has been seriously doubted if a permanent lighthouse can ever be built at the dangerous spots off Cape Hatteras. Ever since the twenties, however, a lightship has been maintained 6 or 7 miles from shore. This lightship, though held in place by mushroom anchors weighing 5,000 lbs., has repeatedly been driven away from her moorings in storms. On one occasion in 1900 the lightship was adrift for three days, while on April 5 of the same year she was dragged 2 miles from her proper station. As the light is located only $5\frac{3}{4}$ miles from the nearest shoal such a displacement is a very serious matter. The two lightships which relieve each other at this station are numbered 71 and 72 respectively. No. 71 is now at Baltimore, and will shortly go to the relief of No. 72.

Mr. Eel's plan, in brief, provides for a bell-shaped caisson 70 ft. in diameter at the base, and sunk to a level of 15 ft. below the sea bottom. This is to be filled with masonry and concrete to 20 ft. above mean high tide, at which height it is to be $27\frac{1}{2}$ ft. in diameter. On this a circular steel structure 20 ft. high shall be erected, and above that a steel tower to a total elevation of 200 ft. In other words, an artificial rock is to be constructed to build the lighthouse on. Mr. Eels has secured the backing of Boston marine underwriters, and his own confidence in the plan is so great that he is willing to wait five years for his compensation, three years more than the bill provides, reserving his pay with compound interest at the end of the longer interval.

INTERNATIONAL SAILING SHIP OWNERS' UNION

Strange Act of the Canadian Pacific Railway gives German Lines its European Emigrant Traffic—Engine room Artificers and the Navy—Important Departure by the British Admiralty.

Liverpool, Jan. 30.—Another step forward has been taken this week towards the founding of the International Union of Sailing Ship Owners. On Wednesday there was held in London a meeting of the committee elected at the international conference in Paris in December last to receive the reports from the delegates representing British, French and German sailing ship owners, and these are said to have been very encouraging. The French and German delegates have secured owners' signatures for considerably more than the 75 per cent. required to make the union operative, in fact their support may be said to be almost unanimous. The British delegates comprising Mr. J. A. Roxburgh, Glasgow, chairman; Mr. R. W. Leyland and Mr. J. Herron, Liverpool; Col. G. Milne, Aberdeen, and Mr. Andrew Weir of Glasgow, reported that although a very large proportion had signed in favor of the union, yet owing to the shortness of the time and the great number of owners that had to be seen, they were not yet in a position to say that the requisite percentage of owners had been won over to their side, but there was every prospect of the required number coming in. The gratifying statement was also authorized to be made that Norwegian and Dutch owners were desirous of being embraced in the union. The utmost unanimity is said to have prevailed among the delegates at the union, and a most optimistic feeling is held that the union will succeed. The committee adjourned to give time for the necessary British signatures to be obtained. It is noteworthy that Liverpool continues to be the stronghold of dissent, although it was at Liverpool that the scheme first had its birth. At the time of writing, the report is made to the officials here that one of the leading Scotch sailing-ship owners, representing 20,000 tons of shipping, has given way and consented to throw in his lot with the international union.

GERMAN LINES GET EMIGRANT TRADE.

For some days past there have been rumors current here that the Canadian Pacific Railway Co., which about a year ago purchased the Beaver Line fleet from Messrs. Elder, Dempster & Co. intended to transfer its continental emigrant traffic to Antwerp, but little notice seems to have been taken of them, or even credited with having any foundation in fact. I am however able to state, on the very best authority, that there is not only ground for the rumors, but that the facts when fully known will occasion considerable surprise both here, which for a great number of years past has been the home of the continental emigrant traffic, and in North America, for the emigrant traffic from European states will not only be diverted from Liverpool to Antwerp, but the business has practically been sold to the German lines. This will be a serious blow not only to the shipping of Grimsby, but to the Great Central railway, which transported the emigrants from the east coast to Liverpool, and also to the port of Liverpool where the emigrants invariably embarked on the Canadian Pacific railway steamers. The German lines have as a result not only got control of this immense emigrant traffic, but they have had handed over to them the highly organized European agencies of the Canadian Pacific railway for booking emigrants, not to mention the great area and unlimited privileges which the company enjoyed in the European continental traffic. And for what has this trade been sacrificed? As far as can be gathered only the doubtful prospect of cultivating a freight business from Antwerp. It is a fact that cannot be contraverted that emigrants can be landed on the quays of Liverpool cheaper than at Antwerp, therefore the question of cost cannot enter into the question. In the absence of a more definite reason, one is left to assume that the C. P. R. does not want to be troubled with the emigrant business, although they can be guaranteed a number of not less than 1,000 European emigrants a week via Liverpool. My authority says that when they have discovered that there is not a considerable freight business from Antwerp to maintain a regular weekly service of steamers the C. P. R. will find out what a great mistake they have made. One can imagine the German lines chuckling to themselves at having outwitted the enterprising management of the Canadian Pacific Railway Co.

There is much satisfaction expressed here among all interested in the shipping trade, at reading the account of the conviction and imprisonment for 18 months in a United States penitentiary, of the crimpers arraigned before the United States commissioner at Pensacola. It is felt that only by heavy punishment, such as in this case, can crimping be anywhere stamped out, and this conviction will doubtless do much in preventing the abuses that have for so long existed. And these United States sentences may, it is urged, be commended to magistrates here whenever remnants of the evil are discovered.

TO SAVE THE LANCASHIRE COTTON TRADE.

The British Cotton Growing Association having met with such a large amount of public favor and support, a further effort is about to be made to extend the association's usefulness for the salvation of the Lancashire cotton trade. At a meeting of cotton representatives held this week, it was decided to increase the funds of the association to the extent of \$1,000,000, to be devoted to the encouragement of cotton growing in the British colonies. To begin with, it is proposed to start cotton plantations at once on an extensive scale in the West Indies, where it has been proved that the best varieties of the raw material can be grown with great success. From the reports that

have come to hand, there can be no doubt of the success of the experiments, and all that is required is financial aid, without which it will be impossible to carry out the large and ambitious scheme. Another part of the project is to send out a large number of cotton experts, to instruct natives, until they are sufficiently familiar with the process. The million dollars is to be used entirely for propaganda work, at the rate of \$200,000 a year for the next five years.

The sailing of the White Star liner *Oceanic* from Liverpool this week is noteworthy from the fact that she is the first of the White Star liners to be fitted with a postal-sorting office on board, to meet the requirements of the American postal authorities, who adopted this method of facilitating the transit of the mails some years ago on board the American Line of steamers. By means of this sea post office, all the mails will in future be sorted and packed ready for immediate despatch to their destination immediately the vessel arrives at New York, or at Liverpool. The other mail vessels of the White Star New York service are to be similarly fitted. Mr. Bruce Ismay, the chairman of the company, was on board, and is visiting New York to attend a meeting of the executive of the International Mercantile Marine Co., but no definite information could be obtained with reference to the New York announcement that he is to succeed Mr. Clement Griscom as president of the combine.

A new departure has just been sanctioned by the British admiralty in regard to engine room artificers and the royal naval reserve, which has the approval both of ship owners and of the principals of important engineering works in various parts of the kingdom. The chief reform effected by the new scheme is in the removal of those irritating social distinctions between deck officers and the engine-room staff, distinctions that have hitherto debarred from enrolling in the reserve any merchant service engineer who valued his self-respect. The new regulations, though still far from perfect, are indubitably a great advance from those which they have displaced, and are by persons qualified to form an opinion, considered likely to attract a fair number of those men whose services in time of war are absolutely essential to the safety of the nation. All candidates to be eligible for the new branch must hold first-class or second-class engineers' Board of Trade certificates, but it is not imperative that they should follow the sea. It is sufficient that they be employed in some engineering works. The age limit is 30 years, and the other conditions are far from onerous. It is laid down, however, that during the first three years of service in the reserve, the engineer must undergo a course of three months training on a warship. The period of enrollment is five years, and this period can be renewed at will in similar terms until the age of fifty is reached, when a deferred pension certificate is granted. At the age of sixty a pension of £12 is paid to artificers, and of £15 to warrant officers. The latter class, whose annual retainer is £15, consists of chief engineers, who are now allowed under certain conditions to enter the Royal Naval Reserve as warrant engineer officers. This concession removes the most potent objection to the old regulations, and practically means that any engineer is now eligible for the rank, providing he has the necessary qualifications. Admiralty agents or officials have been appointed in connection with the scheme at all the principal British ports.

Messrs. W. Fallows & Co. in their annual review of the British iron and steel trade, state that 1903 cannot be pronounced as satisfactory as its immediate predecessors. Since 1889 there has been an exceptional period of good trade, so that it was natural to expect some reaction. This manifested itself towards the end of 1903, and was mainly due to the result of very decided changes in the condition of trade in America, and also in Germany. Overproduction was responsible, no fewer than 46,000,000 tons being turned out last year, of which the United States is credited with 18,500,000, Germany 10,000,000 and Great Britain 8,500,000 tons. Messrs. Fallows considers that with the conditions prevailing in America, and the political uncertainty in the far east, the year opens inauspiciously.

From the returns for 1903, I gather that the Johnston Line steamers carried from Baltimore to Liverpool during last year no less than 41,572 cattle, with the small loss of thirty-eight head, being an average of .091 per thousand of the number carried. The largest cargo was brought over by the *Ulstermore* in April when 1,150 cattle were shipped, and all but one beast safely landed here. Altogether the Johnston Line cattle steamers made 49 trips and on twenty-eight voyages landed all their cargoes without loss.

Sir George Paget, chairman and several directors of the Midland Railway Co. paid a flying visit to Belfast on Thursday in connection with their Irish enterprises. Before leaving the directors said the Heysham route would be ready for traffic next August, and the pioneer turbine steamer for this service would be launched in April by Messrs. Denny Bros., Dumbarton. The company had also ordered two steamers for their Isle of Man service.

Rear Admiral Chas. B. Sigsbee, who commanded the *Maine* when she was blown up at Havana, has been ordered to command the South Atlantic fleet, which he will take to the European station after the maneuvers in the Caribbean sea. He will be succeeded as commandant at the League Island navy yard by Capt. Geo. F. F. Wilde, who in turn will be relieved from duty as captain of the navy yard at Boston by Capt. Albert S. Snow.

UNITED STATES SHIP BUILDING CO.

At the request of the Sheldon reorganization committee Receiver James Smith, Jr. has formulated and the Schwab-Sheldon and Untermeyer interests have adopted a modified plan for the reorganization of the United States Ship Building Co. The acceptance of the plan by the protective bondholders' committee, to which Samuel Untermeyer is counsel, will end the litigation instituted to prevent the adoption of the first Sheldon plan. The plan provides for \$3,000,000 ten-year 6 per cent. bonds; \$15,000,000 of 7 per cent. non-cumulative preferred stock, and \$15,000,000 of common stock. The holders of the present Bethlehem bonds may subscribe at 87 1-2 per cent. for \$150 in new bonds for each \$1,000 of existing Bethlehem bonds. Holders of the present first-mortgage bonds who assent to the modified plan may subscribe at 87 1-2 per cent. for \$100 in the new bonds in respect of each \$1,000 of present first-mortgage bonds. Assenting holders of Bethlehem bonds get 90 per cent. in new preferred stock and assenting holders of first-mortgage bonds 40 per cent. in new preferred stock. Of the common stock, assenting holders of both classes of bonds are entitled to 60 per cent. The floating indebtedness of the ship building company and subsidiary companies is to be paid or assumed by the new company. Under the plan the fixed charges of the company will amount to \$897,550 a year. There will be nine directors of the new company, and the first board is to be selected by agreement between the reorganization committee and James Smith, Jr., the receiver, and Thomas F. Ryan, representing the syndicate managers.

The reorganization committee, George R. Sheldon, chairman; Charles S. Fairchild, John E. Borne, Pliny Fisk and Charles W. Wetmore have arranged with the Morton Trust Co. and Thomas F. Ryan, as syndicate managers for the purchase and sale of the entire \$3,000,000 bond issue at 87 1-2, or \$2,625,000. The syndicate managers have arranged with Harvey Fisk & Sons, who are participants in the syndicate, for the disposal of such bonds as shall be taken by holders of the old bonds. Pliny Fisk takes the place on the reorganization committee of Max Pam. Elihu Root has been made counsel to the managers of the syndicate.

The first step in putting the new plan into effect will be the foreclosing of the mortgage on the ship building company. The Untermeyer suits will be discontinued and the receiver will assent to the foreclosure. The name of the new company has not been definitely determined, but it is understood that it will be called the Bethlehem Steel & Ship Building Co.

In explanation of his acceptance of the modified plan, Samuel Untermeyer, counsel to the bondholders' committee, made this statement:

"Under the guidance of the receiver we have at last evolved a plan which does a fair measure of justice to the bondholders. It is in striking contrast to the Sheldon plan which precipitated this contest. The final collapse and abandonment of that attempt to confiscate the bonds are a reminder that security holders who choose to invoke the protection of the law and have the courage to assert their rights can always safeguard their interests. It has been arranged that Mr. Max Nathan of the protective committee shall become a member of the new reorganization committee; that Mr. Pam leaves the committee, and Mr. Pliny Fisk takes his place; that all the charges and expenses of the protective committee are borne and paid as part of the expense of reorganization; that the committee as reconstituted with the receiver selects the new board of directors. These changes insure a committee and a board of directors free from the domination of Mr. Schwab and a management that may be relied upon to do justice to the security holders of the new company. The rights of the protective committee and bondholders represented are secured through the receiver, who is there to represent their interests. Upon a conservative valuation of the new securities, valuing the preferred stock at 75 and the common at 25, the present bonds, under the new plan, will be worth about 50 cents on the dollar, as against 12 cents, which was their market value under the Sheldon plan. The ship yard plants have been estimated to be worth about \$6,000,000, which is 40 cents on the bonds, so that this plan reserves to first-mortgage bondholders in new securities their full proportion of the properties in which they are interested. The adoption of the plan should not interfere with the efforts of the receiver to defeat the fraudulent bonds."

The receivership of James Smith was made permanent by Judge Kirkpatrick.

NEW NAVAL PROGRAM.

Admiral Dewey's suggestion in favor of heavy fighting ships for the navy has prevailed with the house committee on naval affairs over the recommendations after the general board submitted by Secretary Moody. The naval appropriation bill was completed by the committee after a hearing granted Admiral Dewey. It carries an aggregate appropriation of \$95,000,000. The new ships authorized are one battleship, two armored cruisers, three scout cruisers, and two squadron colliers. The appropriation of \$500,000 made last year for two submarine boats was reappropriated, the boats to be purchased in the discretion of the secretary of the navy. This construction program gives a total of 44,000 tons of heavy fighting ships, as compared with 62,000 tons last year. The heavy construction provided will cost \$21,750,000, while the lighter construction will bring the cost of the building program up to \$28,000,000. The recommendation of the general board was for one battleship, one armored cruiser,

three protected cruisers, four scout cruisers, and two colliers. The committee eliminated entirely the three protected cruisers and one of the scout cruisers recommended by the board and added one armored cruiser, in accordance with Admiral Dewey's advice. Provision was made for an armor plate factory, to cost \$4,000,000, which the secretary of the navy is authorized to construct in case he cannot secure armor plate from private bidders at a reasonable price. For the Guantanamo (Cuba) naval station an appropriation of \$365,000 was made, and for that at Olongapo, P. I., \$862,000 was authorized. An addition of 3,000 men is authorized to the personnel of the navy.

RELIEF FOR SHIP BUILDERS IN TORPEDO BOAT LOSSES.

When the building of the new navy was begun several years ago the ship building interest in general had very little acquaintanceship with the construction of torpedo boats and destroyers. There were parceled among the ship builders twelve torpedo boats and sixteen destroyers, and they were practically the first of this modern type to be constructed in the United States. In Great Britain, where the building of vessels has really been reduced to the business of manufacturing them, certain yards build only certain types. They are, therefore, enabled to arrive at cost with greater accuracy than is possible for a yard which is building a merchant ship in one berth, a battleship in a second, and a gunboat in a third. It is undoubtedly true that the building of these twelve torpedo boats and sixteen destroyers resulted subsequently in great embarrassment to the yards that undertook to build them. They speedily discovered that this delicate and highly-organized craft could not be built within the contract sum.

A bill has now been introduced in the senate by Senator Lodge and in the house by Representative Samuel L. Powers of Massachusetts for the relief of the ship builders who undertook the construction of these vessels. The bill reads as follows: "That the secretary of the treasury be hereby authorized and directed to pay, out of any money in the treasury not otherwise appropriated, to the several builders of the twelve torpedo boats and sixteen torpedo boat destroyers authorized by the act of congress making appropriations for the naval service approved May 4, 1898, viz.: The Bath Iron Works of Bath, Me.; The Geo. Lawley & Son Corporation of Boston, Mass.; The Fore River Ship & Engine Co. of Quincy, Mass.; The Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, of New York; Lewis Nixon, of the Crescent Ship Yard of Elizabeth, N. J.; Neafie & Levy Ship & Engine Building Co. of Philadelphia, Pa.; The Harlan & Hollingsworth Co. of Wilmington, Del.; The Maryland Steel Co. of Baltimore, Md.; The Columbian Iron Works & Dry Dock Co. of Baltimore, Md.; The Wm. R. Trigg Co. of Richmond, Va.; The Union Iron Works of San Francisco; the fair average cost of said boats, without profit, as determined by the board of naval officers, of which Rear Admiral F. M. Ramsay, retired, was president, and as specified in their report to the secretary of the navy, dated April 9, 1902, viz.: \$224,300 for each torpedo boat and \$374,200 for each torpedo boat destroyer, deducting from said sums for each boat satisfactorily completed and delivered the amount already paid said firms on account of said boats."

Mr. Lilburn T. Myers, the receiver for the Wm. R. Trigg Co. of Richmond, Va., says that the Trigg company constructed three of these torpedo boats and two of the destroyers at the cost of about \$1,610,000, the contract price being only \$910,000, thus sustaining an actual loss of \$700,000. The Ramsay board later, as stated, made an investigation and found that the average cost of the boats, exclusive of profit, is \$224,300 each for torpedo boats and \$374,200 each for destroyers. The bureaus of construction and repair and steam engineering were of opinion that the cost reported by the board was fair and moderate. Hon. John D. Long, then secretary of the navy, added the following to the report:

"Difficulties beset the ship builders at every step in the construction of these vessels. It was found that the material specified by the department could not be had in the United States within the time fixed by the department for the completion of these vessels, and the builders were prevented by law from purchasing abroad; and defects were also discovered in the department's designs which rendered the contract requirements impossible of execution. In order to obtain the requisite strength, it became necessary to largely increase the displacement, and as no additional horse power was authorized, the difficulties and costs of speed trials were greatly increased. This increased displacement was in accordance with the requirements of the department, and exceeded the contract requirements by a very large percentage. By reason of these obstacles the contractors were greatly delayed and subjected to an enormous additional expense."

In fact, Rear Admiral F. T. Bowles testified that had the department and the contractors been possessed in 1898 of the experience now gained in connection with these boats, the contracts would never have been made. In equity, therefore, it would appear that the ship builders are entitled to relief.

Dan R. Hanna and William P. Murray of Cleveland have resigned as directors of the Pittsburg Coal Co. Col. J. J. Sullivan of Cleveland will succeed Mr. Hanna and James H. Beal of Pittsburg will succeed Mr. Murray. The late Henry W. Oliver's place will be filled by his brother, George I. Oliver.

SHIP BUILDING IN SCOTLAND.

Figures Compiled Show a General Decline in Ship Building in 1903—Clyde Steamship Owners' Association—Passenger Returns for 1903—Machinery Contracts for Battleships.

Glasgow, Jan. 28.—The ship building statistics of Lloyd's register, which have made their appearance this year rather later than usual, differ as usual from those compiled from ship builders' returns. But Lloyds' do not include any vessels under 100 tons unless they are classed. During the lifetime of James Watt steamers were built at what was considered the large cost of from £40,000 to £120,000. But nowadays steamers are being regularly added to the British and other registers at a cost of ten times these sums. On the tendency towards the construction of vessels of increasing tonnage the returns of Lloyd's register throw much light. Ten or twelve years ago the average number of steamers of 6,000 tons and upwards launched in the United Kingdom did not exceed eight. In the four years, 1896-9, the average rose to more than twenty. In the last four years it has been close on forty. While only three vessels of upwards of 10,000 tons were put into the water from 1892 to 1895, nearly sixty have since been launched. In 1903 alone the tonnages of the eight largest steamers built ranged from 10,523 to 23,763. Smaller ship owners are alarmed to see their share in the carrying industry threatened by these leviathans, and dock authorities are puzzled with the increased demands made upon their berthing accommodation, and the depth of their navigable channels.

With regard to the ship building of last year Lloyd's statistics show that while there was in 1903 a comparative decrease in the tonnage launched all over the world, the falling off was rather greater in the United Kingdom than in foreign countries. The depression in Britain extended over most of the twelve months. In the March quarter the reduction of the work on hand amounted to 49,000 tons. At the end of June this had been partly made up, but after that a decrease set in, reaching 117,000 tons by the end of September and 125,000 by the end of December. As compared with the record figures of 1901, the tonnage under construction at the beginning of the present month was less by 515,000 tons, or about 36 1-2 per cent. According to Lloyd's quarterly returns, which accompany those for the whole year, the work in hand at Glasgow fell from 240,473 tons on Dec. 31, 1902, to 153,646 tons on the same date of 1903. At Greenock the corresponding figures were 114,358 and 105,604. The fall at Newcastle was from 168,109 tons to 152,341. At Belfast, where the condition of the industry has hitherto been remarkable, a reduction is now shown of more than 25,000 tons. Glasgow holds the lead so far as output goes of all the ship building centers. Newcastle comes next, and is followed by Sunderland, Belfast, Greenock, Middlesbrough and Hartlepool.

The decrease of production abroad, foreign and colonial, came in 1903 to 120,184 tons as compared with 1902, and is thus rather less than the United Kingdom decrease of 236,940 tons. After deducting the shipping losses of the year, the net increase of tonnage comes to 405,000 for the United Kingdom and 1,402,000 for the whole world. Both totals are considerably lower than those for several former years, so there is reason to hope that the congestion of tonnage may soon be to some extent relieved.

As remarkable as the development in the size of vessels are the changes that are taking place in the methods of propulsion. As the side-wheels of the days of Watt gave way to single and double screws, so the reciprocating engine is being displaced by turbine machinery. Lloyd's give a list of five vessels fitted with turbines—two warships, two channel steamers, and one yacht—all of which were launched last year. The two Allan liners now under construction will be the first transatlantic steamers to use the turbine, and the probability is that the Cunard company will follow the example set by the Allan company. It is understood that the engineers of France and of Germany are watching the progress of the turbine here with the keenest attention. The Germans still hold the record for speed on the Atlantic, and they do not want to lose that record to the United Kingdom by means of the turbine. The French seem to be constructing more steam tonnage than before. The steamers now being built in France represent a total tonnage of 105,000 as compared with 77,000 tons a year ago. Sailing tonnage, however, is now at a discount in France.

CLYDE STEAMSHIP OWNERS' ASSOCIATION.

At the annual meeting of the Clyde Steamship Owners' Association a few days ago President T. W. McIntyre, steamship owner, occupied the chair. He said that this time last year he expressed regret that his term of office has not been brightened by a condition of prosperity, and he made a somewhat gloomy forecast for the incoming year. That forecast has been amply fulfilled, and this year he cannot yet see any silver lining to the cloud. Trade has its ups and downs and a spring tide follows a neap with due regularity. Only a few years ago the pig iron markets of the world were controlled and the market price regulated from the Glasgow royal exchange, and this country was first in the production of iron. It now only occupies the third position. This was doubtless due in a great extent to natural causes, but it illustrates how completely and quickly a change may come over an industry. Mr. McIntyre referred to the report of the ship subsidies committee which was unanimous in recommending, first, that Board of Trade regulations should be enforced against foreign ships equally with British ships:

Second, that light dues should be abolished. No movement on the part of the Board of Trade or the government has been made to give effect to those two recommendations, and Mr. McIntyre moves for pressure upon them. The first recommendation referring to foreign ships is by far the more important, and he thinks should present no difficulty in enforcement provided the Board of Trade receives the necessary authority from parliament. In some quarters there seems to be a fear that such a policy might lead to reprisals, but this fear appears to be pusillanimous and unfounded. Other countries, even some of our own colonies, have had no hesitation in enforcing their regulations on our shipping, yet nothing dreadful has happened to them. Ship owners of this country do not ask much. All they desire is a fair state of trade competition, although with this they will still require to watch carefully that every opportunity is taken advantage of lest they fall behind. A few years ago a settled condition of things seemed to exist, and it appeared as if Britons could look ahead and invest their money in existing enterprises without fear of any immediate change which might materially reduce their value or render them obsolete. Today we are reminded that discovery and invention have by no means reached finality, and there are indications that we are approaching a new period of evolution in many directions. Wireless telegraphy has not yet displaced the cable companies, the electric car the railways or the automobile the horse; steam is still with us, and radium has not yet been found in sufficient quantity to reorganize everything. "The reciprocating engine" (says Mr. McIntyre) "still exists, although the turbine has demonstrated that it must be taken seriously. The time still seems distant when goods, like sound, will be transmitted along a ray of light, and until that time comes I take it that our ships will be required for the oversea trade. It may be the turbine, or some modification of the turbine, is to be the engine of the future, necessitating possibly a change in form of the hulls of steamers. Such changes, however, take place slowly and usually only after a lengthened probationary period. Meantime, what we have to do is to keep our eyes constantly open and see that no one gets a start of us with a type of vessel or engine by which they are enabled to carry goods at a lower cost than ours. It is for the legislature to see that we are not hampered by too many regulations, as other trades were in their earlier stages, such as electrical engineering and the manufacture of motors. It is difficult to believe that the latter industry so recently as 1896 was throttled by the law, which did not permit a motor to go on the roads of this country at a speed greater than 4 miles an hour, and even then it required to be preceded by a man carrying a red flag! We must see there is no man with a red flag impeding the progress of our shipping industry."

At the annual meeting of the Chamber of Shipping on Feb. 5 resolutions are to be submitted on imperial trade in British vessels; exclusion of British vessels from the trade between the Philippines and United States ports; inter-association arrangement to countervail shipping bounties; French bounties on shipping; government employment of British tonnage; abolition of light dues; enforcement of Board of Trade regulations upon foreign equally with British ships; tonnage measurement of British and foreign vessels; measurement of French tonnage; withdrawal of prohibition of importation of live cattle from Canada; stamp duty.

The new Anchor Line steamer Italia, launched lately by D. & W. Henderson & Co. went down the river the other day, and after adjusting compasses a preliminary trial was made of the engines. Several runs on the measured mile were then taken, on each of which the Italia made a little over 16 knots. This was considered highly satisfactory both by her owners and builders. The Italia is a high-class passenger vessel built as already described to the highest class of the British corporation for the Mediterranean and New York service of the Anchor Line and with her fine lines, high funnel, numerous deck erections and the twelve boats which she carries, she presents a very handsome appearance. Besides accommodation for a limited number of cabin passengers on the bridge deck, the Italia has berths for 1,400 steerage passengers, all fitted in a superior manner. The vessel is lighted throughout with electricity, and has refrigerating machinery and chamber for the carrying of fresh meat and vegetables and the making of ice.

MACHINERY CONTRACTS FOR BATTLESHIPS.

The admiralty have now arranged the contracts for the machinery of the three battleships which have been ordered from the government dock yards instead of being given out to contract. The Africa, to be built at the Chatham dock yard, is to be engined by John Brown & Co., Clydebank; the machinery for the Hibernia laid down at Devonport will be supplied by Harland & Wolff, Belfast; and the engines and boilers of the Britannia to be constructed at Portsmouth will be supplied by Humphreys, Tennant & Co., London. These battleships are of the same type as those of the King Edward VII. class, and the low tenders sent in for the machinery by the successful firms are explained by the fact that each has already in course of construction machinery of the same dimensions and type, so that their patterns, jigs, etc., do not require to be made anew. Thus John Brown & Co., have on hand the engines of the Hindustan; Harland & Wolff those of the King Edward VII.; and Humphreys & Tennant those of the New Zealand. The engines are of the four-cylinder, triple-expansion type, the high-pressure cylinders being 38 in., the intermediate 60 in., and the two low-pressure cylinders 67 in. in diameter, with a stroke of 48 in. The power of 18,000

I. H. P. is to be realized with a piston speed of 960 ft. per minute. As to the boilers, one-fifth of the power will be got from generators of the cylindrical type, and the remaining four-fifths from Babcock & Wilcox water-tube boilers as is the case with the Commonwealth, building at Fairfield; the Dominion building at Barrow-in-Furness; and the Hindustan just launched here.

The Argonaut is to go to Fairfield works for an extensive overhaul immediately upon her arrival from the China station. This vessel, which belongs to the Diadem class of protective-deck cruisers of 11,000 tons and 18,000 H. P. although a little different in detail, was originally built by the Fairfield company, and was commissioned on April 19, 1900, and has since then been on the China station.

Great interest is taken here in the results of the trials of the German protective-deck cruiser Hamburg, as she is one of two vessels building by the Vulcan Co. of Stettin, for the purpose of testing the relative efficiency of reciprocating and turbine engines. The Hamburg has the ordinary piston and crank engines; the sister cruiser, to be fitted with the Parsons rotary engine, is far advanced. Both hulls are alike; the length is 360 ft. 10 in., the beam 40 ft. 4 in. and at 16 ft. 5 in. draught the displacement is 3,000 tons. Normand boilers are used, and with twin-screw reciprocating engines a speed of 23.3 knots has been realized with 11,000 I. H. P. This power is 1,000 in excess of that anticipated in design, and the result was the addition of 1.3 miles per hour to the speed expected. The turbine boat has thus a severe task. It will have exactly the same under-water form and the same boilers, and on trial will have the benefit in reduced displacement of any economy in weight resulting from the application of the turbine system of propulsion. Each ship is to be driven to give its best result, and the weight of water and coal used to attain a given speed over a lengthy run will be the measure of the work done by each system of prime mover. These German ships are of the same size as the Amethyst and Topaze, the British cruisers with which similar comparative trials are to be made. The length and beam differs only by inches, but the British ships are of lighter draught, and the anticipated speed with 9,800 I. H. P. is 21¾ knots. The great difference in the two pairs of ships, however, is in the number of turbines, shafts and propellers. All the ships hitherto fitted with turbine machinery in this country have had three shafts; the earlier vessels have two screw propellers on each outboard shaft, with one in the center. Experience has demonstrated that single screws on all three shafts gives higher efficiency. The Germans, however, are adopting four shafts with one propeller on each, an arrangement which may prove convenient for utilizing a part of the full available power when cruising at low speeds, and also may give higher efficiency. The difficulty with turbines is to attain high economy at reduced power, and by working two of the four shafts it will be possible, when low speed is desired, to run the turbines at almost their full power.

The Clan Line of Glasgow have just placed an order with Wm. Doxford & Sons, Sunderland, for the construction of six large turret steamers. The International Mercantile Marine Co. will commence about the middle of March a service between Liverpool, Glasgow and New Zealand with a view to improving American trade. Goods will be trans-shipped at Liverpool.

Beginning on Saturday first and continuing until the end of August the Atlantic liners will follow the southern route adopted by the "Conference" lines and pursued by some of the companies for years in order to escape the risk of ice.

A new steamer to carry about 3,000 tons dead weight on 17.9 ft. draught at present being built to be ready in March has just been sold for about £21,500. Three years ago vessels of this size realized between £30,000 and £31,000.

PASSENGER RETURNS FOR 1903.

From the passenger returns for 1903 of the various transatlantic lines the Allan-State Line have not done so well, but in the Glasgow lines overhead there is still an increase both in cabin and steerage passengers of 107 and 2,039 respectively. The totals are not so high as in 1892 and 1893; but then the traffic was largely in Scandinavian emigrants travelling via the Forth. The Anchor Line ships made forty-three voyages from the Clyde as compared with forty-one, and they carried 2,001 first and 6,828 second cabin passengers—together 8,829—and 11,921 in the steerage. The average number per ship in the first cabins was forty-seven, and in the second cabins 159—together 206—as compared with 200 in the previous year. The number has steadily increased since 1896, when it was 158. This result compares well with other lines. The number of steerage voyagers per ship shows a corresponding development, the past year having 277 to credit, as compared with 233 in the previous year; since 1897 this figure has steadily advanced from 110. Anchor liners also made thirty-two passages from the Mediterranean—one fewer than in the previous year—and they carried 104 first cabin and 26,643 steerage passengers—about the same as in 1902, but 10,000 more than in 1901, when there were thirty-four trips. The average per passenger in these ships was 836, as compared with 795,476, and 594 in the three preceding years. Allan-State Line boats have made twenty-eight trips as against twenty-seven in 1902; and the average per ship was ten first and fifty-eight second cabin and sixty steerage passengers. The average of cabin voyagers in previous years was ninety, seventy-nine, ninety-four, fifty-six, forty-four, sixty-seven and eighty-seven; so that the past year does not compare favorably except in 1898 and 1899 while the

previous records for the steerage were seventy-four, thirty-seven, forty-eight, forty-three, thirty-seven, thirty-eight and fifty-six; so that with the exception of 1902, there is a better comparison.

The North German Lloyd top the passenger list of all lines, having taken 15,983 first and 20,048 second cabin and 119,079 steerage passengers. There is an increase in cabin passengers equal to 20 per cent., as compared with the previous year. The advance from 10,803 in 1895 to 35,031 cabin passengers during the past year is striking. There has been an increase in the steerage passengers from Bremen and from the Mediterranean ports. From the former there were eighty-nine trips, and the average number of passengers was 1,367, including 1,005 steerage and 153 first and 209 second cabin. This company also run steamers to Baltimore, and this will increase the number of their passengers to America last year to nearly 200,000. There were thirty trips from Mediterranean ports, as compared with forty in the previous year. The Hamburg-American Line have not such a large increase. There was the same number of trips from Hamburg, 103, and twenty-six, as against twenty-three from the Mediterranean. The average per ship is higher—1,135 as against 1,012 for the Hamburg ships; but the proportion of cabin passengers is less than continental lines.

The highest average per trip of the ships of any line is that of the North German Lloyd Bremen service. On eighty-nine trips four more than in the previous year—they took an average of 1,367 passengers as compared with 1,242 and 1,130 in the two preceding years. The Red Star Line takes second place this year. Their average for fifty-one trips is 1,249 as compared with 999 and 630 in the previous year, thanks to the recent additions to the line from the Clydebank works. The ships of "La Veloce" Line, which conducts an emigrant service from the Mediterranean ports comes third, having on an average 1,230 passengers on twenty-six trips. The Hamburg-American take the fourth place, instead of second rank as last year, their average being 1,135 on the same number of trips as in the previous year—103; while their "mean" in the previous years was 1,012 and 789. The North-German Lloyd Mediterranean service comes next with 1,114 passengers, as compared with 819. The French Line comes next with an average of 1,068 passengers for fifty-nine trips made. The Holland-American ships took 1,000 per trip. This is a lower position than in the previous year, when they were fourth, with 985 passengers. In 1902 only the two German mail lines had an average over 1,000; in 1901 there was only the North-German Lloyd; in previous years there was no such remarkable result. The first British mail service on the list, the Cunard, had 802 passengers on their sixty-five trips, compared with 784 in the previous year. Next is the White Star Line with 748 passengers on fifty-one trips as compared with 1902; and the American Line with 605 passengers on forty-four trips.

ANNUAL INSPECTION OF OLD SAILING VESSELS.

The statistics recently sent to the senate from the department of commerce and labor showing the number and character of American merchant vessels of over 100 tons gross register lost at sea during the past fiscal year showed that out of a total of seventy-four sail vessels and barges lost during the year the hulls of thirty were over twenty-six years old, and the hulls of forty-two were over twenty years old. These figures led Commissioner of Navigation Chamberlain to suggest that an act of congress subjecting all American sail vessels and barges over twenty-five years of age and over 100 gross tons to government inspection was more desirable at the present time in the interest of life and property than a general load-line act. As a result of this suggestion Senator Perkins has introduced a bill proposing to provide such inspection annually for all sail vessels and barges over twenty years of age. His bill is as follows:

"That the owner of any seagoing sail vessel or seagoing barge of the United States of 100 gross tons or over and over twenty years of age shall, at least once in every year, apply for the inspection of the hull of said vessel by the local inspector of hulls; and it is hereby made the duty of said inspector to inspect such vessel. If the inspector is satisfied that the hull of the vessel is suitable for the service in which she is to be employed, has suitable accommodations for the crew, and is in a condition to warrant the belief that she may be used in navigation with safety to life, he shall issue a certificate of inspection in a form to be prescribed by the secretary of commerce and labor.

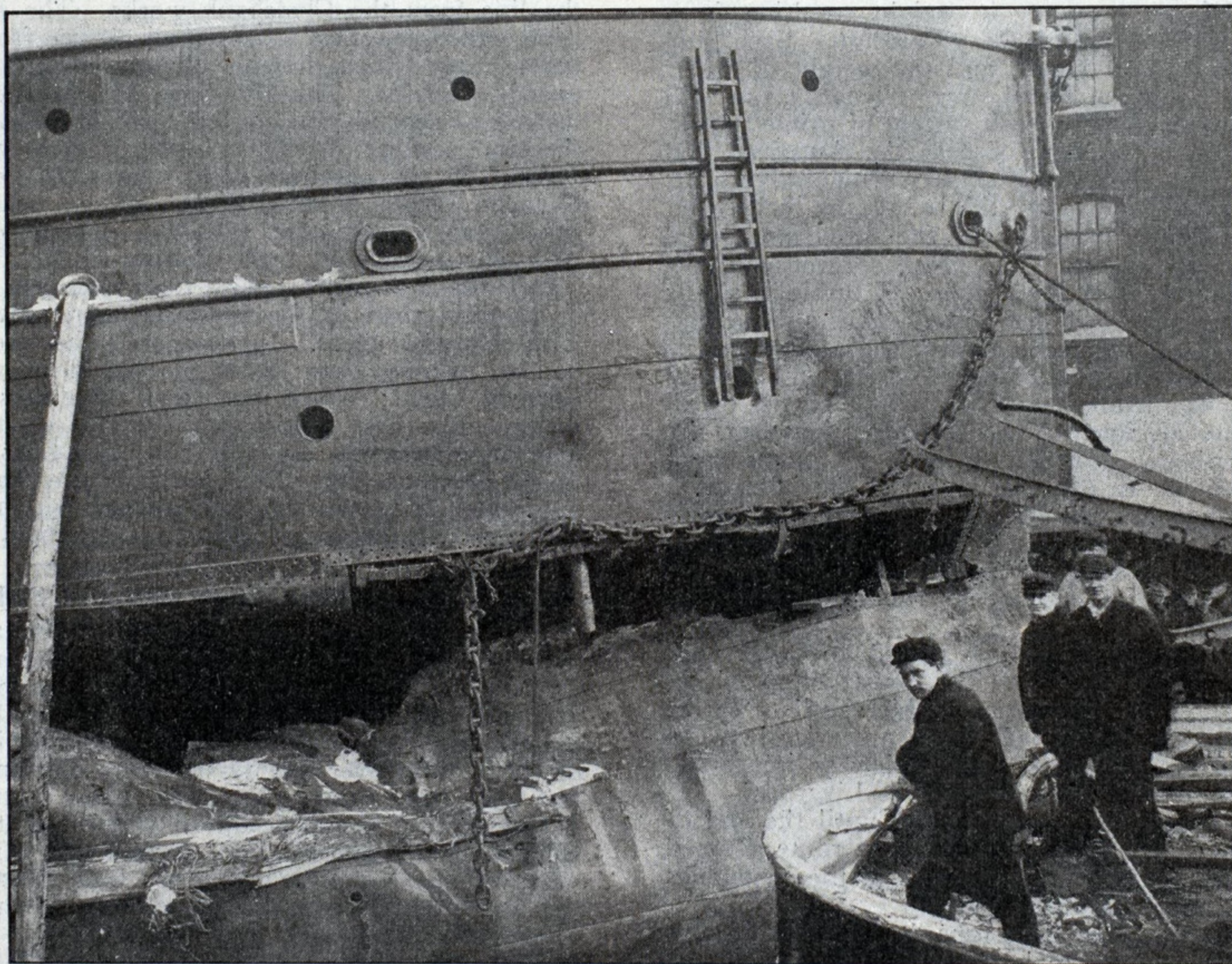
"Sec. 2. That a register, enrollment, or license, clearance, or other paper shall not be issued by any collector or other chief officer of customs to any vessel described in section one unless at the time said vessel has in force a certificate of inspection as provided in section one. If any such vessel shall be navigated without such certificate of inspection the owner shall be liable to a penalty of \$500 for each offense."

Capt. John Persons, keeper of the Thunder bay island life saving station, received his mail last Saturday for the first time since Jan. 3, nearly a month. He came across the ice to North Point, 4 miles, on skates, drawing a skiff rigged up on runners, with his wife and daughter as occupants. The ice was thin in some places, but did not break through. In a fish cabin on North Point the captain found 2 bu. of mail, including nearly 100 letters and several Christmas presents. The fishermen carried the Persons' mail to the fish shanty twice a week, expecting every trip that the island people would call for it. Capt. Persons states that this winter holds the record for continued cold and snow among the hard winters during his service.

NEWS OF THE GREAT LAKES

INJURIES TO THE STEAMER JOHN W. MOORE.

It took precisely two weeks to release the steamer John W. Moore from the embrace of the dock and the abutment of the Superior viaduct at Cleveland into which she was wedged when the William E. Reis ran away from her winter moorings and took the Moore and the Eads with her. The Reis, as already related, was supposed to be securely moored at her winter quarters, but owing to the fact that considerable ore remained in her it was impossible to bring her close against the dock. The freshet caused a powerful current to set in between the Reis and the dock so that the steamer was really acting as a sort of dam and it was more than her fastenings could bear. She went down the stream like a young colt, dragging a 4,000 lb. anchor after her. Undoubtedly the dragging anchor did much to steady her. She bumped into the Eads and Moore and all three fetched up against the abutment of the Superior street viaduct, the Moore being jammed against the dock with the Reis on her port quarter, and the Eads occupying the most westerly position with her bow against the Valley railway bridge. The accumulation of dirt and piling which came down with the three run-aways froze to the bottom of the vessels and to the bed of the river. Therefore pulling upon them was very much like trying to pull a great steamer on dry land. After several days of experimenting it was discovered that the Reis occupied the pivotal position and that it would be necessary to move her before the others could be dislodged. By pumping steam into her windlass, by hitching several tugs to her and a couple of locomotives from the Baltimore & Ohio railway tracks along the dock the Reis was finally pulled away. The Moore's bow came up about 2 ft. when the Reis was moved, showing that the steamer was resting upon her heavily. It was a small task thereafter to move the Eads. The Moore was stranded when the water was very high, and in order to release her a large part of the dock had to be cut away and her stern had to be lifted up with jacks. A large hole was punched in the Moore's side by striking the bridge abutment, and she soon filled with water. The accompanying photograph shows very graphically the condition of the Moore's bow. Pumps were put aboard the Moore as soon as possible, but it took several days to get her free of water, as a cofferdam had to be built about the break of her starboard side. The Moore, being a wooden vessel, is very badly damaged and it is estimated that it will cost about \$40,000 to repair her, though nothing definite has been arrived at.



Showing the Condition of the Bow of the Steamer John W. Moore after the Reis was Pulled Away.

discharge between the parties hereto." The tugmen balked at this, insisting that the men should not be discharged without good cause and then only after an arbitration trial. Mr. J. A. Smith of Cleveland told them that unless they were willing to concede to the owners what they demanded for themselves it was impossible to do business. The Tug Firemen and Linemen's Protective Association then declared that they would not work with men other than members of the Licensed Tugmen's Protective Association. Therefore nothing concerning hours and wages could be done with them until the affairs of the Licensed Tugmen's Protective Association were settled. Two more unions are still to be treated with, the International Brotherhood of Steam Shovel and Dredge Engineers and Cranesmen, and the International Brotherhood of Steam Shovel and Dredge Firemen, Linesmen and Deckhands, but no settlement is expected with them.

LAKE FIREMEN.

In connection with the great lakes trade one of the most onerous things to deal with last year, both for owners and those aboard ship, was the attitude of the firemen. They began the season by making unreasonable demands and during the entire year were, in individual instances, exceedingly obstreperous. Of course, on board ship the engineers bore the brunt of this conduct, and that they felt it seriously is evidenced by the fact that it was a subject for discussion at the recent annual meeting of the Marine Engineers' Beneficial Association at Washington. The

engineers resolved that better service is necessary from the firemen and they have evinced a decided determination to aid in securing it. They have expressed a willingness to come ashore and work to the end of securing non-union firemen for steamers if competent men cannot be secured from the firemen's union. Certain correspondence to this end has already passed between the officers of the engineers' association and the officials of the Lake Carriers' Association.

ORE PRICES—OPENING OF NAVIGATION.

The indications are that the season of navigation on the great lakes will be unusually late in opening. Indeed as far as can be judged there is no especial reason why it should open early but there are quite a number why it should not. A preliminary meeting has been held in Cleveland during the past week between the producing, selling and consuming interests in Lake Superior ores. While nothing was done concerning prices of ore it was generally concluded that they would be lower in 1904 than in 1903. There is an abundant supply of ore on docks, and furnaces have ample stock piles, so that there will be no immediate rush to replenish supplies. In fact it was stated some time ago that the Steel Corporation had sufficient ore down to last it until next August. Concerning the shipments of iron ore during 1904, it is practically certain that they will show a falling off from the figures of the previous two years, but how much this reduction may be it is, of course, impossible to predict. So many conditions are likely to arise as to make the most intelligent prophecy absurd. It is undoubtedly true that during the boom period

DREDGE OWNERS AND LABOR UNIONS.

The Tug and Dredge Owners' Protective Association in session at Detroit is having trouble in reaching agreements with the four labor unions with which it has dealings. They were compelled to break off negotiations with the Licensed Tugmen's Protective Association because the latter would not concede to the owners the right to hire and discharge men. In fact the conference got no further than the first clause which covered this special point. The clause read, "It is understood and agreed that there shall be full and equal freedom as to the employment and

when ore was, figuratively speaking, coming down the lake in torrents, the mining interests were very conservative and exacted only a very modest advance in comparison to the profits which furnacemen were reaping. Their prosperity lay in the volume of production and not so much in the individual profit per ton. Now with a contracted market for ore the interests of the producing-consuming companies and the purely merchant ore companies would seem to be so wide apart that no fixed agreement could be reached between them. The Steel Corporation was represented at the meeting of the ore men by Mr. James Gayley, its vice-president, and Mr. D. G. Kerr of Cleveland. The Steel Corporation has been a great steadying force all along and it is natural that it should desire to maintain prices at an average level. Another meeting will be held within ten days. But this much is certain: That early sales are not to be expected because furnaces are very well supplied now; that ore is very slow in going forward from docks to furnaces; and that there can be no ascending scale of prices upon a doubtful market.

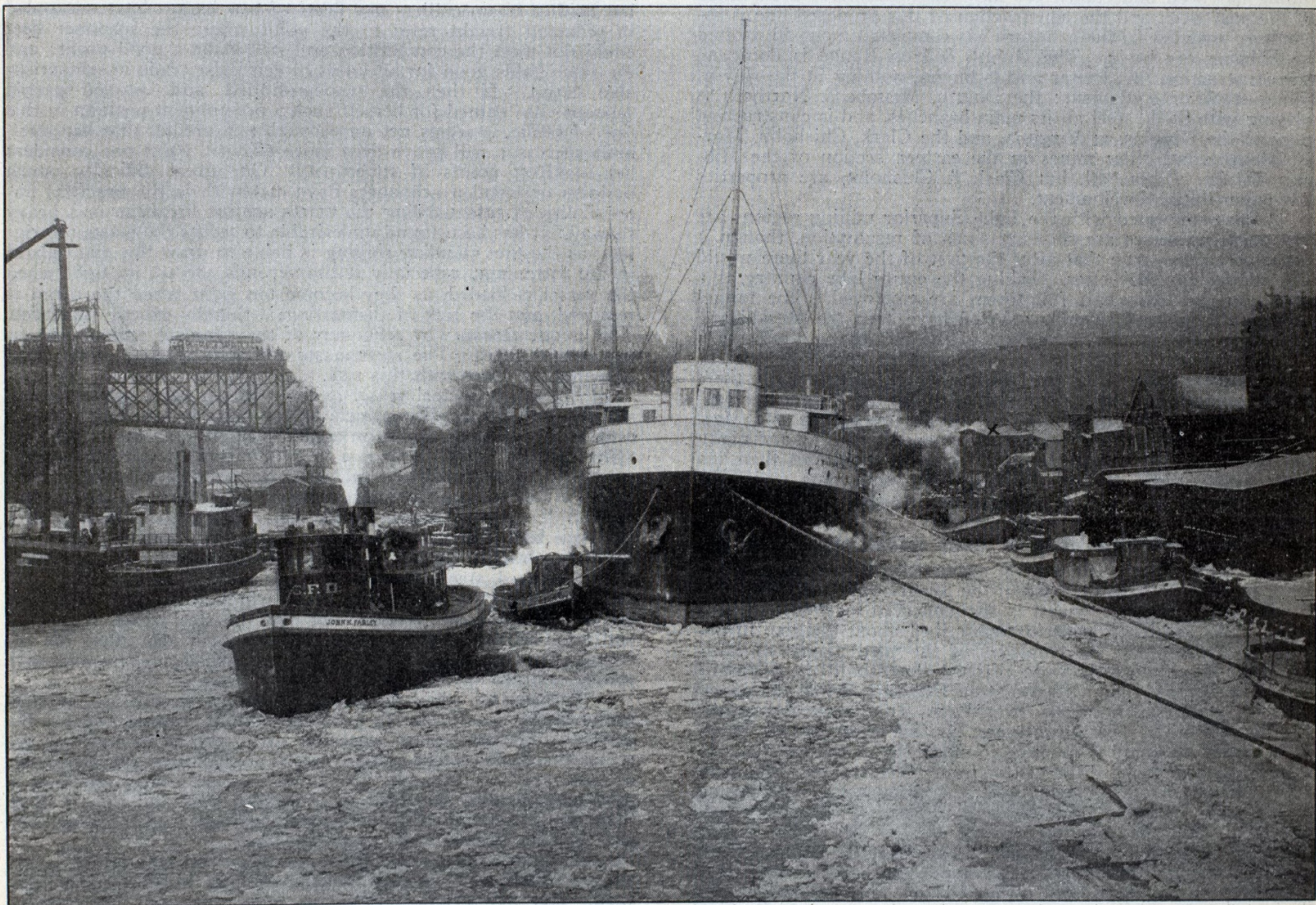
GENERAL MANAGER FOR GREAT LAKES TOWING CO.

At the meeting of the executive committee of the Great Lakes Towing Co. held in Cleveland on Wednesday it was stated that the affairs of the company were never in as good shape as now.

SUPREMACY IN IRON AND STEEL MAKING.

Concerning the marvelous growth of the iron and steel industry in the United States a very excellent point is made by the Scientific American in a recent review of that industry. It says that the mere existence of natural supplies of raw materials of manufacture would not in itself be sufficient to account for the marvelous growth of the iron and steel industry of America. This is the very point that the Review has all along emphasized. It is neither the abundance nor the excellence of the country's raw materials that makes its position so impregnable. It is the fact that they can be so easily assembled at the furnaces. Herein lies the real supremacy of the Lake Superior country as an iron ore producer. Its enormous deposits have the advantage of the cheapest rate of transportation known. It really would not matter much if deposits were discovered elsewhere. They could not diminish the value of the Lake Superior deposits for the furnace-cost of Lake Superior iron ore, meaning the cost of getting the ore to the furnace, cannot be approached. The Scientific American thus enlarges on the theme:

"The raw materials must be brought together to some common center, and the transportation of this enormous tonnage, the frequent handling and trans-shipment that is necessary must be done with the least possible amount of expense if the American ironmaster is to start with anything like an even chance



Tugs and Locomotives Towing the Steamer William E. Reis out of the Jam at the Superior Street Viaduct, Cleveland.

The business is well organized and systematized. Order has been brought out of chaos and there is money in the treasury. The committee could not have paid a greater compliment than this to Mr. Harry Coulby, who scarcely a year ago took hold of the affairs of the company and brought them quickly into a state of harmony and legislation. Mr. Coulby surrenders the duties of his office as general manager of the towing company to give his undivided attention to the management of the Pittsburg Steamship Co., the lake end of the United States Steel Corporation. As to a successor to him in the management of the towing company the committee is unanimously in favor of Capt. Edward Smith of Buffalo, provided he can be persuaded to give the office the close application which its affairs require. While nothing has definitely been decided it is quite likely that Capt. Smith will be appointed to the office at the annual meeting of the company to be held in New Jersey next week. Capt. Smith is the vice-president of the company and is familiar with all branches of lake trade. He has had much experience with labor matters and has been a member of the executive committee of the Lake Carriers' Association since the association became an incorporated body. Capt. Smith is president of the Buffalo Dry Dock Co. and is a member of the well-known firm of Brown & Co., vessel agents at Buffalo.

in competition with European manufacturers; for these are not under the necessity of transporting their materials over a thousand miles of distance before they can smelt them in the blast furnace. Now, here it is that a man has so ably co-operated with nature. Acting on the well-established industrial principle that the greater the magnitude of the scale of operations, the less is the cost per ton of the finished product, the machinery and general plant for excavating, handling and transporting the ore have been built on a colossal scale. At the mines steam shovels capable of lifting five tons of ore at each stroke will load a 25-ton car in two and one-half minutes, or at the rate of 600 tons an hour, and in accordance with the same policy cars have grown to 50 tons in capacity and locomotives to 130 tons in weight. When the ore trains reach Lake Superior special automatic, quick-acting machinery unloads the ore direct into special ore steamers built for this particular work. At the eastern terminal ports similar machinery unloads the ore from steamer to railroad, where again 50-ton cars and 130-ton engines haul the precious mineral in trains of 1,000 tons, or more total weight, into the heart of the coal and coke region, where it is finally unloaded by special machinery at the foot of the blast furnaces.

"The ingenuity and resourcefulness shown in the matter of handling and transporting the huge tonnage necessary for the manufacture of over 17,000,000 tons of iron is marvelous."

SIZE OF AVERAGE CARGOES—IRON ORE OUTLOOK.

Duluth, Feb. 10.—Average cargoes of vessels loaded last year at the ore docks of the Duluth, Missabe & Northern road at Duluth, were almost precisely 6,000 gross tons. This is 2,000 tons greater than the average four years ago. Average cargoes loaded at the docks of the Great Northern and Duluth & Iron Range roads were several hundred tons smaller, but above any previous year's record. It looks as though the bulk of Minnesota ore shipments for the coming years would be from the Duluth, Missabe & Northern docks, as that road controls the United States Steel Corporation's traffic from the stupendous Hibbing district, and of other Mesabi range mines as far east as Eveleth. The Great Northern road, shipping to independent furnaces chiefly, is somewhat handicapped during periods of dullness, but controls an enormous tonnage and may in time equal the best records of any other road. The Duluth & Iron Range is the only line to the Vermillion range, whose shipments may be figured as averaging 2,000,000 tons per annum for a long term of coming years, and all the eastern Mesabi mines, both of the Steel Corporation and others. Its three largest mines on the latter range are Fayal, Biwabik and Stephens, the latter having enormous undeveloped possibilities. The Great Northern has been surveying for a line along the western Mesabi to the Mississippi river, running through several townships where some lean ore has been found, but where no mining has been undertaken yet these engineers have been called off the past week and the construction of this proposed line is indefinitely postponed. The company has completed a cut-off around the Hibbing ore basin. The Duluth & Iron Range is doing no new construction this winter and is buying nothing in the way of rolling stock or equipment; the Duluth, Missabe & Northern is relaying with 80-lb. steel all its main branches, and is constructing spurs to the Higgins, at Virginia, and the Clark, Chisholm, Morris, Monroe and Niles mines in the eastern section of the Hibbing district. These all, but Clark & Chisholm, are properties now under initial development.

Affairs connected with the Lake Superior mining regions are very quiet, no mines are showing signs of resumption, though it was expected by some that after the first of the year there would be a change for the better. Taking the entire lake country as a whole, far less than half full forces are employed. The ranges that have been most severely affected have been the Mesabi and Menominee, the former on account of the fact that its mines can be readily reopened and that a suspension of operations can be more complete without injuring the mines, the latter because there is slight demand for the general classes of ore the Menominee produces. Most of the mines of the Gogebic, Vermillion and Marquette ranges are running day shifts, some of them day and night, and the Vermillion is less affected by present conditions than any other region. The general feeling is that shipments will commence very late and will be considerably less than last year.

FINANCES FOR SHIP NOT SUFFICIENT.

Duluth, Feb. 10.—The project of financing a steel ship at Superior in order to keep the yard of the Superior Ship Building Co. in operation during the winter is abandoned, at least for the time being. The people of Superior subscribed about \$40,000, in addition to \$30,000 that the employees of the yard agreed to raise, and when these amounts were reached they could do no more. They then secured about \$35,000 from Duluth and had the promise of all additional necessary from G. A. Tomlinson and associates, but when Mr. Tomlinson began figuring with the ship building company he found their price so much higher than he had anticipated that he dropped the matter from consideration. The yard will be closed as soon as some repairs are completed. The closing of this yard is due, in some measure at least, to the policy pursued by its employees during the past two or three years. Had they been reasonable in their demands and met the company half way, it is possible that work to maintain these yards at least partially busy would have been struggled for more ardently. But the company found no incentive to send work to a naturally high priced yard with labor in the same frame of mind as it had been there. A year ago 1,500 men were employed in these yards and four ships were under way.

Monday, Feb. 8, there were in store at the head of Lake Superior 11,000,000 bu. of all grains, including 5,960,000 bu. flax. This amount will increase slowly from now on. It looks as though the export grain business of Duluth would languish at least till the crop of 1904 is in elevators. All wheat now at the head of the lakes will be used by American mills.

Efforts will be made to induce congress to provide for the construction of additional breakwaters at Duluth. With the building of the new canal there wider than the old and with its piers bell shaped at the inner ends, storms have been felt far more inside the harbor than in preceding years. Waves have been so high at points some distance inside the harbor that vessels could not lie comfortably, and bars have been formed south of the canal. It is proposed by Capt. Alex McDougall and others that a V-shaped protection be built about a mile out from the outer ends of the present piers, breaking waves before they reach the canal. This work would be costly as the water is pretty deep at that point, about 65 feet. It seems to have been an error that the canal piers were shaped flaring outwardly at the inner ends, though the reasoning that caused this shape was apparently correct.

There are 15 in. of ice across the canal at Duluth, something not known for the last seventeen years. People are regularly crossing on the ice. The city has just closed a contract with the Waukesha Aerial Bridge Co., a concern organized for the pur-

pose, for the construction of the overhead bridge across the canal which has been planned for some time. This bridge will be two high piers carrying a stiff truss, and on the truss will be suspended a car to run back and forth across the canal. The truss will be sufficiently high to clear any topmasts, but the car will be swung on the street level and will carry passengers, freight and electric cars. The price of the bridge is \$100,000.

USE OF STEEL FOR SCHOONERS.

The dominion of steel in ship construction is gradually replacing wood even in the construction of schooners. It is, of course, not yet pronounced but it is growing. A steel-built ship has immense advantages over its wooden prototype. In discussing the matter naval architects have said that as soon as ship owners realize the economy of the steel ship they will have nothing but steel.

"Time and experience have amply demonstrated," said one of them, "that for carrying freight by sea for distances of 250 miles and upward the fore-and-aft rigged schooner of 1,000 tons and over is the most economical of all methods. Take the coal-carrying trade from Delaware and Chesapeake bays over Nantucket shoals to Providence, New Bedford, and Boston, for instance. Every expedient that human ingenuity can suggest has been tried to find a cheaper way of bringing coal between these points, but neither steam colliers nor fleets of tow barges have succeeded in reducing freight rates to the point where the schooner fleet could not meet the competition and still make a good profit: and the same holds good for all kinds of coastwise trade in nonperishable cargo. If then the wooden-hulled and wooden-sparred schooner has gained for herself such a pre-eminent position in this line of traffic, it seems not unreasonable to predict that her steel-built successor will prove even more efficient when one considers her manifest points of superiority. One great difficulty which builders of wooden schooners have met with is the practical impossibility of safeguarding the masts against breakage in a heavy seaway. It has been found undesirable to secure the masts too rigidly, as the taut standing rigging is liable to draw the chain plates in the fastenings, especially if the shrouds are set up tight when the vessel is loaded, as they become too tight when the cargo is removed, and the risk of dismasting is thereby greatly increased. This is one reason why schooners of this type are seldom sent on deep-sea voyages. The steel masts and wire rigging of the steel schooner do away with this risk.

"Then, too, a steel vessel is about 27 per cent. lighter than a wooden one of like size, which means that she can carry 27 per cent. more of dead weight on a like draught. Naturally the carrying capacity of any ship is a very important item to be considered. In the shape of her hull some very radical changes can be made, all of which are improvements over the type most common in the present wooden schooner. She can be built with a flat plate keel not extending below the bottom plating, which reduces her draught from 6 to 10 in., and still provides an opportunity for using a steel centerboard if desired. The necessity of a square forefoot and a long deep keel, which all wooden schooners have, is obviated, the result being that the steel vessel is quicker and more reliable in stays. The steel schooner also offers the advantage incident to the use of bilge keels, which prevent excessive rolling and are an efficient help against leeway.

"Perhaps the chief advantage embodied in the use of steel is the facility it affords for a double bottom construction for the carriage of water-ballast whenever necessary to increase or decrease the displacement of the vessels, according as the exigencies of wind and sea demand. The initial cost of a steel schooner is of course greater than that of a wooden one, and this is more than compensated for by the greater lasting qualities of the former, and the smaller cost of maintenance.

"The most noted example of the new steel type is the seven-masted Thomas W. Lawson, built in 1901, at the Fore River Ship yard. Her net freight capacity is 7,000 tons, and she carries a crew of only sixteen men, or about half as many as would be required in a square-rigged vessel of the same size and tonnage. The introduction of steam capstans and windlasses and stockless anchors has made it possible for two or three men to work such a vessel's ground tackle, and as the sails are hoisted and the pumps worked by steam power she can put to sea with a much smaller crew than would formerly have been considered safe. I understand that the net profit she paid her owners the first year was something like 24 per cent., so there can be no question as to the success of the new departure from the financial standpoint.

"Although this building of steel schooners is in its experimental stage, and we have but little data as yet to judge of their real value, it seems safe to predict a great future for them, not only for coastwise trade, but for over-sea voyages as well. Arthur Sewall & Co., Bath, Me., are now using steel entirely, instead of wood, in the construction of their new schooners, and other builders are following their example. Already some half a dozen steel schooners have been launched. Combining as these ships do, the maximum of carrying capacity with the minimum of operating expenses, they form a class which for either coastwise or over-sea trade have never been equalled heretofore in this or any other country."

The Fisher's Island Navigation Co. was incorporated last week for \$30,000. The company is having built at Palmer's ship yard, New London, Conn., a steamer for service between New London and Fisher's island.

DESCRIPTION OF THE MARINE STEAM TURBINE.

In view of the attention that has been lately attracted to the steam turbine by the suggestion that it will possibly be the form of motor used in the new fast Cunarders, it may be of interest to give a short history of Mr. Parsons' invention. The facts herewith related are taken from the *Shipping World of London*. No doubt the first steam turbine was the machine described by Hero of Alexandria in his *Pneumatica* over 2,000 years ago; but it was so crude and of such a different form to the present types of turbine that it need not be seriously considered. The next rotary engine of which there is any record was Branca's steam wheel. It was made in 1629, and was essentially an impact machine, a jet of steam playing on the vanes of a wheel drove it round and worked a small model. This type has been developed in to the De Laval steam turbine, which has met with considerable success, especially in Scandinavia, for driving electrical machinery. In 1884, the Hon. C. A. Parsons, after many improvements brought out his first steam turbine, which is now in the South Kensington Museum.

This turbine engine consisted of two groups of fifteen successive turbine wheels, or rows of blades, on one drum or shaft within a concentric case on the right and left of the steam inlet, the moving blades or vanes being in circumferential rows projecting outwardly from the shaft, and nearly touching the case, and the fixed or guide blades being similarly formed and projecting inwardly from the case and nearly touching the shaft. A series of turbine wheels on one shaft were thus constituted, each one complete in itself, like a parallel flow water turbine, but unlike a water turbine, the steam after performing its work in each turbine passed on to the next, preserving its longitudinal velocity without shock, gradually falling in pressure on passing through each row of blades and gradually expanding. Each successive row of blades was slightly larger in passage-way than the preceding, to allow for the increasing bulk of the elastic steam, and thus its velocity of flow was regulated so as to operate with the greatest degree of efficiency on each turbine of the series.

In 1892 this and another type, which had been manufactured in the interval, were discarded, and the present form of compound condensing turbine was introduced. The double flow of the original turbine was abandoned, and the steam admitted at one end of the cylinder, the exhaust being placed at the opposite extremity. This naturally resulted in an end pressure being exerted on the rotating spindle by the steam; but this was overcome by arranging a set of rotating dummy pistons on the side of the steam inlet opposite to the working vanes. The steam pressing on these pistons acted in the opposite direction to that acting on the working blades, and thus balanced the total end pressure on the spindle. At the same time that this alteration was made the designs of the rotating spindle and casing were so changed that as the steam passed along the length of the machine it found a larger annular space through which to flow. This was accomplished by increasing the diameter of both moving and fixed members in steps, the increment in the diameter of the spindle not being quite so great as that of the casing. This arrangement made it possible to work the steam expansively and warranted the use of a condenser. Such is the form of present type of turbo-electric generator, and is substantially the same as that of the marine turbine. The small illustration here reproduced admirably shows the shape of the moving blades and the stepping up of the diameters to secure expansive working.

Almost from the first inception of the steam turbine Mr. Parsons had in view the idea of marine propulsion by means of his inventions, but it was not until the beginning of 1894 that the suggestion took a practical form. In January of that year a pioneer syndicate was incorporated to build an experimental vessel and investigate the possibilities of marine turbine propulsion. The steamer built was the now famous *Turbinia*, which was completed later in the same year, and underwent a most exhaustive series of trials. She was 100 ft. long by 9 ft. beam, with a displacement of 44½ tons, and was at first fitted with a single screw and turbine; but on account of the unsatisfactory results obtained, this set of machinery was taken out and replaced by a triple set of turbines, driving three shafts, with three propellers on each shaft. With this arrangement the unprecedented speed of 34½ knots was attained, and at a speed of 31 knots the total consumption of steam was 14½ lbs. per I. H. P. The machinery to attain this speed was of over 2,000 H. P. and weighed 22 tons. Of this only 3 tons 13 cwt. were for the main engines; that is to say, the main turbines weighed about 4 lbs. per horse power. Another very notable reduction of weight was effected in the propeller shafts, which, through running at so high a speed, were not subjected to so severe a torque as slower running shafts, and hence could be made materially lighter than those necessary with reciprocating machinery. The center of gravity being so much nearer to the bedplate is another advantage enjoyed by the turbine; but at the same time the propeller shaft, having to be, at least, the largest radius of the turbine away from the skin of the vessel at the forward end, necessitates a greater rake to the tailshaft; this is not noticed, however, in ships with full forms, as the small propellers used do not need any great immersion.

One of the chief difficulties met with in applying the steam turbine to marine propulsion was the provision of a screw propeller which would work satisfactorily at the high speeds at which the turbines must run to be efficient. As was found with the fast destroyers built some years ago, the limiting speed at which ordinary screw propellers would operate satisfactorily had

been reached, and when this speed was more than doubled in the case of the turbines, considerable trouble was experienced. The area of the screw being comparatively small, the water had to pass it at enormous speed to absorb all the power supplied; but, water being more or less viscous, it was unable to flow in at the forward side of the screw at sufficient speed. A partial vacuum formed, and the screw revolved in a cavity, which naturally reduced the efficiency. To get a more definite idea of what really occurred Mr. Parsons made some very interesting and ingenious experiments. Model screws were made to revolve in a glass tank filled with warm water, and were illuminated intermittently in such a way that the screw appeared to the eye to be stationary. Photographs were taken of the screw running under different conditions, and from the information thus gained Mr. Parsons was able to design a propeller of such proportions that its efficiency was materially increased. Vessels were tried with as many as three propellers on each shaft, the idea being that the forward screw would supply water to the one directly behind it; but it has since been demonstrated that this is unnecessary, and now only one is fitted on each shaft.

From the passenger's point of view the marine turbine gains the greatest advantage over its rivals by the absence of vibration, it being almost impossible to detect whether the machine is running or not, unless the air pumps or governors are in view. The air pumps were at one time driven off the free end of the shaft through a worm reduction gear, and thus revealed the fact that the engine was in motion; but now it is more usual to drive the air pumps from a separate engine. Unlike turbines arranged to drive dynamos and such like machinery, the end pressure of the steam on the working blades is no objection; in fact, it is taken advantage of to counterbalance the thrust of the new screw propeller. A few dummy pistons of small diameter are introduced to take up the surplus end pressure due to the steam, and the only thrust block needed is a light one fitted to define the position of the turbine spindle. The expansive ratio possible with this type of engine is very great; on the *Turbinia* it is 150-fold, and it is claimed that this leads to an economy in steam of as much as 25 per cent. This great expansion results in the volume of the exhaust steam being enormous, and entails large condensers. But at the same time, since the efficiency of the turbine increases by nearly 4 per cent. per inch of vacuum, after about 25 in. vacuum, it is an advantage to get as good a vacuum as possible, and for this reason it is well to have fair sized condensers.

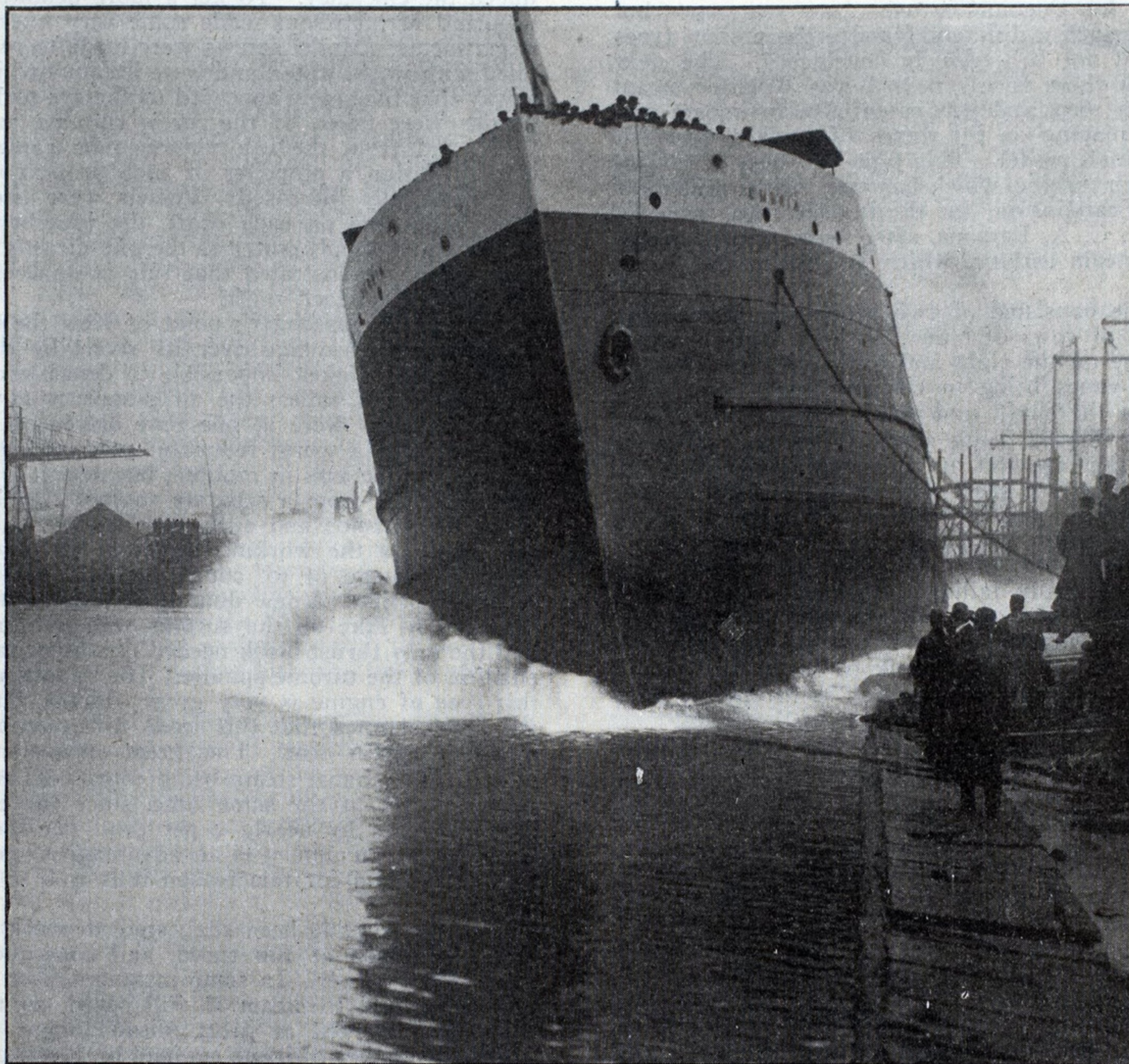
As has already been suggested, to work at its best a turbine must be driven at full speed, and consequently, in the marine type, at full power. In some instances, such as war vessels, it is seldom desired to steam at full speed, so that the engines are constantly worked at great disadvantage. To overcome this trouble a number of boats engined by Messrs. Parsons have either been fitted with a small reciprocating engine or a separate special turbine for running at slow speeds. With passenger steamers and other vessels which steam at full speed continuously, when they are under way, this objection is not felt, and the only auxiliary turbine necessary is that used to drive the boat astern—for the turbine will not reverse. This turbine is fitted inside the exhaust passage of the low-pressure main engine, and hence uses up no extra space, besides running in a rarified atmosphere which materially reduces the windage of its moving parts. When going astern the ahead turbines are connected to the condenser so that their spindles run in a vacuum and thus waste very little power. As to maneuvering the turbine lends itself admirably, for its direction can be reversed at full speed and this by merely closing a valve and opening that of the astern turbine.

With the large engine room staff carried on modern high-powered steamers it would be a surprise to most to see how few engineers are necessary to tend a turbine. There are very few moving parts, and the largest of these are automatically lubricated with pressure oil, so that all the engineer has to do is to oil the air pump, rods and such small parts. This automatic lubrication results in a great saving of oil which becomes an insignificant item on the stores bill. It is interesting to note that since none of the moving parts exposed to steam pressure are in actual contact lubrication of these parts is unnecessary, no oil is carried over into the condenser and the water in the hot well is so clear that it is fit for drinking and is an ideal boiler feed. The great objection raised by the opponents of the turbine is its steam consumption. No doubt for small powers turbines are not economical machines but with larger units their economy is undoubted. Messrs. Brown Boveri of Baden, Switzerland, who manufacture the Parsons' turbine on the continent, have obtained a consumption of 15.8 lbs. per kilowatt hour on a 4,000 H. P. turbo-electric set supplied to the Frankfort corporation. This is believed to be the world's record for steam economy. If the new Cunarders are engined with turbines the speed at which the shafts would run would be so reduced that the screws would work without serious loss and the turbines be on practically the same footing as reciprocating engines in this regard, so that their great economy of steam could be fully realized.

Improvements to cost between \$10,000 and \$12,000 are being made on the steamer *Nyack* of the Crosby line at Grand Haven. They include the building of a new deck, with accommodations for from 60 to 100 additional passengers, and the inclosing of a portion of the lower deck, where quarters will be provided for the crew. When the work on the *Nyack* has been completed similar improvements will be made on the steamer *Naomi*.

PERE MARQUETTE NO. 19 ON THE ROCKS.

Car ferry Pere Marquette No. 19 struck upon Fox Point reef last Saturday night and within forty minutes thereafter filled with water. Capt. C. H. Sinclair, general manager of the Great Lakes Towing Co., has gone to the scene to take charge of the operations of releasing the vessel. Wrecking outfits have been dispatched and it is probable that the ferry will have to be lifted off the rocks. When the steamer struck, the inrush of waters extinguished the fires under her boilers so that the crew was left without heat, light or power. Part of the crew put ashore in a small boat and the tug Meyer took off the rest. The steamer has seven cars aboard, and, if possible, they will be backed on to another ferry before an effort is made to lift her off the rocks. Inspection of the steamer shows that her bottom is badly torn. She is not believed, however, to be in any special danger, as she is resting firmly on the rock. It is not thought that either the wind or waves can push her off into deep water. The car ferry was only recently completed at Cleveland, having left late in December with Pere Marquette No. 20 for Milwaukee.



Launch of the Umbria.

[Building by the American Ship Building Co., Cleveland.]

TO BE NAMED AUGUSTUS B. WOLVIN.

The largest ships in the world, of course, are on the Atlantic ocean, and yet of the thousands that are engaged in traversing it only twenty-two are larger than the lake steamship now building at Lorain for Capt. A. B. Wolvin, and which, when it is launched, will be named Augustus B. Wolvin. This great steamer, which is progressing steadily towards completion, is 560 ft. over all, 540 ft. keel, 56 ft. beam and 32 ft. deep. She will have quadruple expansion engines with cylinders 18½, 28½, 43½ and 66 in. in diameter by stroke of 42 in. Steam will be furnished by two Babcock & Wilcox water-tube boilers to be fitted with induced draft. The steamer will carry 10,000 gross tons of ore and will cost, when completed, \$470,000.

LAUNCH OF THE UMBRIA.

The steamer launched last Saturday at the local yard of the American Ship Building Co. for H. A. Hawgood and others of Cleveland is a duplicate of the steamer Umbria, which was launched last fall at the West Superior yard of the company. She is 440 ft. over all, 420 ft. keel, 50 ft. beam and 28 ft. deep. She will have triple-expansion engines with cylinders 22, 35 and 58 in. diameters by stroke of 40 in. Steam will be supplied by two Scotch boilers, 13 ft. 2 in. in diameter and 11½ ft. long, fitted with Ellis & Eaves draft. The Umbria will carry 6,800 gross tons of iron ore and will be completed by the opening of navigation in the spring. The steamer was named by Mrs. E. T. Bierce and quite a number were present to witness the launch.

VESSEL OWNERS AND MASTERS TO CONFER.

A conference between the executive committee of the Lake Carriers' Association and the representatives of the American Association of Masters and Pilots will probably be held in Cleveland during the present week. The conference was arranged by Capt. Charles Maytham of the Masters and Pilots and President Livingstone of the Lake Carriers. It will be the first conference ever held by the masters and vessel owners for the purpose of fixing a schedule of wages. Last year arrangements were made with all the other men employed on the vessels by the executive committee of the Lake Carriers' Association.

tion. It is understood that the masters have a definite schedule of wages to present to the association, having framed it at the recent meeting of the advisory board at Port Huron and ratified it at the annual meeting of the association in Washington.

PLANS FOR STEAMER FOR CANADIAN LAKES.

Plans have been received by the Cleveland & Georgian Bay Line at Detroit from the Walker ship yard of Sir W. G. Armstrong, Whitworth & Co., Newcastle-on-Tyne, for the steamer which the company proposes to introduce into its Canadian service. The plans call for a steamer 250 ft. over all, 235 ft. keel, 41 ft. beam and 14 ft. deep. It is not yet determined whether the steamer will have single or twin screws. She will be built of steel and the steel will extend up the sides to the top of the first cabin deck which will insure greater strength than is ordinarily contained in this type of lake steamer. Mr. W. J. Brown, the general manager, reports that the company intends to bring three of these steamers to the lakes and that they are to be placed on the route between Toronto, Hamilton and Ft. William, sailing

twice each week. Each steamer will have sleeping accommodations for 250 passengers and all the staterooms will be outside rooms with running water. The dining room will extend the entire width of the steamer and will have a capacity for seating 150 persons at one time. Concerning the service Mr. Brown says:

"During the season June 15 to Sept. 15 the steamers will call at Cleveland, and will stop regularly from May 1 to Dec. 1 at Windsor, Sarnia, Goderich, Kincardine, then through the North channel of Georgian bay, stopping at Manitowaning, Little Current, Gore bay, Thessalon, Bruce Mines, Sault Ste. Marie, Ft. William and Port Arthur on the north shore of Lake Superior, returning via the same route and making the same calls. They will be able to make the round trip in from eight to nine days, as they are to be built under a guarantee to make 16 knots per hour on a draught of 12 ft. They are also expected to carry 1,000 tons of package freight on this draught. As the bulk of the package freight for western Canada originates at Toronto and Hamilton, and up to the present time has been all shipped by rail to Georgian bay points and reshipped there by boat, which necessitated two extra handlings, assures these steamers being a success from the start, as they will be able to deliver freight at Sault Ste. Marie and Ft. William twenty-four hours in advance of what it has formerly been done via the rail and lake route and with but one handling, which will guarantee the freight being delivered at its destination in much better condition than it has heretofore."

Irrespective of the state of industry, the weather conditions are likely to delay the opening of navigation on the great lakes. This winter is one of the most severe in the history of the lakes. Certainly not for twenty-five years has one as rigorous been experienced. Probably to find its equal one would really have to go back to the winter of 1857, when on June 3 vessels were unable to get into Marquette harbor owing to the ice. At the present time there is no open water to be seen at the head of the lakes. In Duluth harbor the ice is 3 ft. thick and extends in a solid field as far as Encampment island, 50 miles distant. Similar conditions are reported in other harbors.

The new steamer under construction at Toledo for the Michigan City Steamship Co. will be named Indianapolis.

AROUND THE GREAT LAKES.

The Empire Ship Building Co. of Buffalo is building a steel scow 150 ft. long and 34 ft. beam for the Empire Stone Co. of Buffalo.

Fire breaking out in the forecastle of the tug Nau, as she lay at the docks of the Pere Marquette Steamship Co. at Ludington, entailed a loss of \$400.

The report of the harbor master at Toledo shows that during 1903 the number of vessels arriving at that port was 3,164, a decrease of 107 in comparison with 1902.

Capt. Thomas Jones, grand treasurer of the Ship Masters' Association, says that \$162,000 have been paid by the association in death benefits since it was organized sixteen years ago.

The lighthouse superintendent has rejected the bid of Tobin & Co., Jackson, Mich., for the reconstruction of the Spectacle reef light station crib, and the government will do the work itself.

Capt. Charles L. Potter, government engineer at Duluth, has accepted the bid of F. B. Spear & Sons, Marquette, Mich., for furnishing 4,300 bbls. of Atlas cement for construction work at Marquette harbor.

During the season of 1903 3,200,938 tons of coal were shipped from Buffalo. The average rate at which this coal was carried was 48.9 cents to Chicago, 57.8 cents to Chicago "south branch," 37.9 cents to Duluth and 49 cents to Milwaukee.

At the annual meeting of the Kinsman Transit Co. held at Willoughby on Feb. 4 the following directors were elected: Mrs. Anna C. Minch, Henry Steinbrenner, Mrs. Alice Dreher, W. P. Trinter, Joseph Lampoh and Mrs. Sophia Steinbrenner.

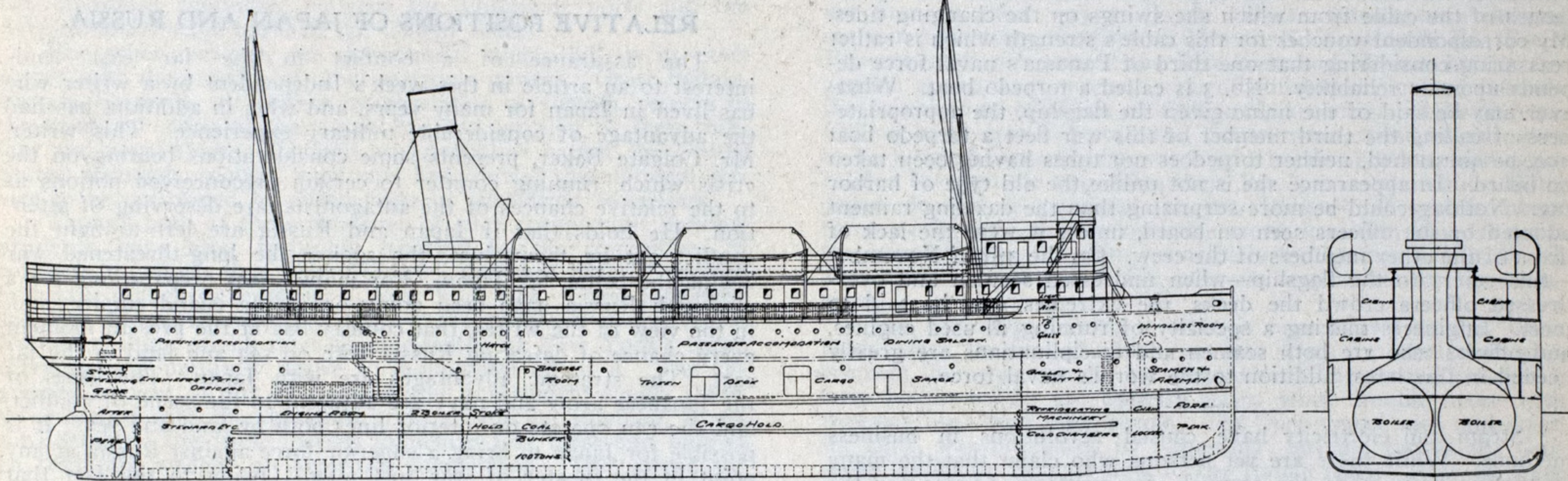
Mr. Robert J. Dunham, president of the Ship Owners' Dry Dock Co. of Chicago, has announced that Mr. J. T. Radcliffe,

Louis Rhein, George Seehr, Fred Schardt, William Burser and Dr. Peterson.

It is reported from Duluth that the firm of Wieland Bros. are making preparations to raise the cargo of the sunken steamer Thomas Wilson in Lake Superior. This steamer was sunk just outside of Duluth harbor in collision with the steamer G. G. Hadley nearly two years ago. She went down in 75 ft. of water, taking nine members of her crew with her. Wieland Bros. bought the wreck but so far have made no effort to recover it. They will now, according to report, make an attempt to recover the cargo of 3,200 tons of ore by pumping it out. As a rule the salving of vessels beyond a certain depth of water has never been successfully done, and the operations of the Wielands will therefore be watched with great interest.

The rights of navigation in all navigable streams is held to be paramount, and it was therefore expected that the government should eventually order the removal of the swing bridge at Ashtabula harbor which has been a source of great annoyance to vessel men since lake commerce assumed its present dimensions. This bridge is situated at a sharp bend in the river and ships of modern size have great difficulty in passing it. It is stated that before a new structure is thrown across the river that the government proposes to have another channel dredged at this point to eliminate the sharp bend. As to how the expense of the new structure will be apportioned is a matter still to be determined. It is likely, however, that it will be borne jointly by the county of Ashtabula and the railways which use the bridge.

Suit was begun in the United States district court at Detroit last week by the Gilchrist Transportation Co. of Cleveland against the steamship William S. Mack for \$13,691.45 for damages al-



Profile View of Proposed Steamer for Canadian Service of the Cleveland & Georgian Bay Line.

who has been assistant superintendent of the company, has been appointed superintendent to succeed Mr. W. W. Watterson.

Not a charter has been made to load grain at Chicago so far. Vessel men in general are adhering to the request of the Lake Carriers' Association not to tie up their ships with grain for fear of labor troubles. Besides the market conditions are against loading grain for storage purposes.

Mr. A. F. Harvey, assistant general manager of the Pittsburg Steamship Co., whose headquarters have been in Duluth since the United States Steel Corporation was formed, will hereafter make his headquarters in Cleveland. Mr. Alex. Langell, who attends to the insurance of the company, will also have his headquarters in Cleveland instead of Duluth hereafter.

Mr. Robert Logan, assistant general manager of the American Ship Building Co., will go to England and Scotland in April to make a personal inquiry into ship building. His trip will have special reference to the development of the steam turbine for marine use. Mr. Logan is an eminently practical man and keeps well abreast of the advancement in naval architecture and marine engineering.

Judge John R. Hazel of Buffalo has handed down a decree in the United States district court vacating and setting aside the sale of the steamer City of Grand Rapids to John T. Mahoney. The decree orders the Great Lakes Engineering Works, the petitioners, to deposit in ten days the sum of \$1,200 with the clerk of the court as payment in advance of a bid for the vessel upon re-sale.

Adolph Green of Green Bay, Wis., has purchased the sunken steamer Baldwin and plans are being made to raise her before spring. The Baldwin, loaded with lumber, cleared from Green bay last fall and sank near Long Tail point, in Green bay. The boat is loaded with pine lumber, the property of insurance companies, and about 50,000 ft. of hard lumber, owned by the Murphy mill.

The Kelley Island Dock & Steamboat Co. is considering the subject of placing another passenger steamer on its line between Sandusky and the island. A meeting will be held on Feb. 18 to act upon the subject. At the annual meeting held last week the following officers were elected: President, T. C. Hamilton; vice president, John Couter; treasurer, Frank Hauser; secretary, John Couter. The board of directors consists of the officers and Otto Dodge, John Cameron, Edward Ward, Henry Scheele,

leged to have been sustained by the steamer City of Rome last summer. The plaintiffs state in their libel that on the night of July 11 last the City of Rome was bound down with a cargo of iron ore, with the schooner May Richards in tow. When well down near Bar Point light the lights of the Mack, up bound, were discerned, and it is claimed that the proper passing signals were blown so that the vessels would pass to starboard. "The Rome was then near the light, and of her colored lights the Mack disclosed only her green," says the libel, "and it was observed that she was not navigating in accordance with the passing signals, and was not directing her course to starboard. Not until it was too late did she begin to swing, although the Rome's wheel had been put hard aport. The Mack's port bow struck the port side of the Rome near No. 2 hatch, cutting through the deck and frames, etc."

Capt. C. H. Westcott, supervising inspector of the eighth district, comprising Detroit, Chicago, Milwaukee, Marquette, Port Huron and Grand Haven, has filed his report for 1903 at Washington. The document contains interesting information in that it covers all accidents that occurred in the district together with the losses, shows how many passengers were carried in the district, how many lives lost, etc. In respect to passenger traffic Detroit, as usual, tops all other fresh water ports. Local steamers carried the enormous number of 7,219,886 out of a total of 9,977,482 for the entire eighth district. The other five ports follow in the order named: Grand Haven, 915,303; Port Huron, 709,101; Chicago, 592,659; Milwaukee, 275,705; Marquette, 264,828. No passengers lost their lives at Detroit and only twelve were lost in the district. During the year 405 boats were in trouble by striking snags or stranding. Port Huron leads in this respect with a total of 143, Grand Haven was second with 92, and Detroit got along with 60. The loss on vessel property in the district for the year was \$771,696.

The commission appointed to secure funds for a silver service for the battleship Ohio, now under construction at the yard of the Union Iron Works, San Francisco, has tendered its resignation to Governor Herrick, having failed of its mission. The commission in its letter of resignation say that \$20,000 will be required, whereas they have been able to raise only \$3,460. It is proposed now to raise this money by popular subscription, for which the sum in hand will be used as a nucleus.

SEEN AND HEARD ON THE LOOKOUT.

One would suppose that a newly born nation—on the principle that a child needs to crawl before accomplishing the feat of walking—could only gradually make a bold show of self-reliant independence. And this is generally the case in northern climes. But down south—in Latin America a nation recently sprang full-panoplied from a bloodless revolution. Though only a few months old the republic of Panama already possesses a navy. Reports of numerous revolutions made us aware that these southern countries maintain armies; in fact, each aspirant for presidential honors appears to have an armed following. But countries south of the equator were never known to indulge in the expensive luxury of a first-class navy. Thus it is certainly commendable that this youngest of nations has already created an incipient naval force. Of course, this force is as yet far from formidable. It is the custom in these Latin countries to name the principal streets in the cities for the date of the happening of some auspicious event in history. For instance, a revolutionary general's victory may result in the renaming, or re-dating, of most streets. And anyone losing his way in one of their cities is said to be "mixed in his dates." Transferring this custom to the water Panama named its flagship the "3rd of November"—the date of the nation's birth. The fact that said flagship is in command of an army officer may cause surprise. But, then naval commanders are not born, but must be made, and army officers only are as yet available to direct the work of the crew. The engines of the flagship are in charge of a Scotchman. The second man-of-war, a craft of undoubted antiquity, had her engines disabled a few years ago, before she had attained to the dignity of a fighting ship, and when engaged in the fruit trade. The defect of these engines, never having been remedied, the extent of this ship's travels is determined by the length of the cable from which she swings on the changing tides. My correspondent vouches for this cable's strength which is rather reassuring considering that one-third of Panama's naval force depends upon its reliability. No. 3 is called a torpedo boat. Whatever may be said of the name given the flagship, the appropriateness of calling the third member of this war fleet a torpedo boat may be questioned, neither torpedoes nor tubes having been taken on board. In appearance she is not unlike the old type of harbor tug. Nothing could be more surprising than the dazzling raiment adopted by the officers seen on board, unless it were the lack of dress of the other members of the crew. On the 3rd of November—this refers to the flagship—when undressed seamen and overdressed officers crowd the decks, the extremes may be said to meet. Engineers making a specialty of running ill-used engines, and officers who are both seamen and disciplinarians are greatly needed in this latest addition to the world's naval force.

Steam and electricity have caused revolutions in business methods. While there are yet persons who claim that the many inventions have made the struggle for existence harder for the masses, progressive people hail with delight the discovery of another time and labor saving device. The telegraph was instrumental in obviating the need of the once so necessary super-cargo on shipboard. And now wireless telegraphy is responsible for the presence of a formerly unknown official on board the most modern of steamers. Known in the fore-castle as the "Marconi-man," and with his status as a ship's officer recognized forward, aft, and below the water line, he holds forth—when on duty—in a private cabin on the upper deck. Wires leading from this cabin are conducted to a rather shaky looking extension of the main truck. Acutely aware of my own limitations, and having only a vague, a very vague notion of the principle by which rampant messages are assorted and delivered, I decided to cultivate the acquaintance of one of the American liner's "Marconi-men." Incidentally I would state that wireless telegraphy is Greek to me still. But the official with whom I conversed proved to be a Greek scholar. He explained that "telegraph" is a combination of two Greek words: "tele"—meaning far, and "graph" from the Greek verb "graphein"—to write; a writing from afar. Further he stated that most steamers had a sufficient amount of electric power on board to make possible, under favorable circumstances, the transmission of messages to a steamer 150 miles distant. The captain of a steamer upon which "wireless" had been installed keeps account of the time of departure, as well as the average speed, of other steamers that have a similar apparatus on board. It is then comparatively easy to calculate at what time one of these telegraph offices is floating within a radius of 150 miles of his boat. The operator having been advised of the probability of his receiving an answer to his call, tentative sounds are sent around the 150-mile circuit. While unable to explain lucidly this manner of correspondence as conducted between the trucks of steamers' main masts, I can tell prospective passengers the charges for sending messages. From ship to ship—12 cents per word; from ship to shore \$2 for 10 words, or under, and 12 cents for each additional word. On American craft nothing is charged either for signature or address. Foreign steamers, however, exact payment for signatures. My informant gave it as his opinion that this was done to cause owners of abnormally extended names to heed the warning that "brevity is wit."

As has already been stated in this column in another issue of the Review the last season proved a very unsatisfactory one for fishermen. In fact, an unprecedented scarcity of fish was the usual complaint heard along the wharves. On the principle that after diagnosing a disease it is advisable to remove its cause, several persons are now at work to discover the cause of this ex-

ceptional decrease in the annual harvest from the ocean. And, of course, various reasons are given for the scarcity of edible fish. Cape Cod fishermen blame the voracious dog-fish—a veritable case of giving a dog a bad name. Not being thought edible,—and this only on account of its unprepossessing appearance and suggestive name,—the dog-fish has enjoyed long years of immunity from the danger of hooks and nets. The extermination of the dog-fish having been decided upon, the next question was to discover the best means to this, for all fishermen, desirable end. It being considered impracticable to fit out vessels for the sole purpose of conducting a kill and burn campaign among the dog-fish fraternity, the novel expedient of creating an artificial enemy for the fishermen's "bete-noir" was selected as the easiest way out of the difficulty. By the foregoing is meant that by cultivating a taste for canned dog-fish among the lovers of seafood, and incidentally giving this fish a monetary value, an increasing demand for them in the markets must ultimately be followed by a decrease of the supply. The United States government asked Mr. Irving Field of Harvard university, to give an opinion of the dog-fish as regards a staple of food. That those who are bent on the dog-fish's destruction believe that there is something in a name is evidenced from the fact that canned dog-fish will appear on the market as "mustelus canis"—this being the terror's Latin cognomen. Prof. Field some time ago gave a dinner at which a dish of dog-fish was the "piece de resistance." All partakers agreed that it was delicious, though none could give the name of the fish that came on the table incognito. Let us hope, for the sake of the fishermen, that dog-fish, under whatever alias introduced in the market, may meet with a hearty welcome on the American board.

F. H.

RELATIVE POSITIONS OF JAPAN AND RUSSIA.

The assurance of a conflict in the far east lends interest to an article in this week's Independent by a writer who has lived in Japan for many years, and who, in addition, has had the advantage of considerable military experience. This writer, Mr. Colgate Baker, presents some considerations bearing on the crisis which, running counter to certain preconceived notions as to the relative chances of the antagonists, are deserving of attention. He holds that if Japan and Russia are left to fight the conflict out by themselves, the sooner the long-threatened war begins the better for Japan. For many years preparations for a war with Russia have been going on in the island empire, and, in the view of the writer, that country has at the present moment every chance of defeating Russia both on sea and land in the far east. The strategic advantages are with Japan. The bases of the Japanese army and navy are adjacent to the scene of conflict, and she can operate on interior lines both by land and sea. It is possible for Japan to bring a superior force against Russia at any point in the theater of war just now. Owing to the fact that Vladivostok is ice-bound, the Russian forces there may, in the writer's view, be dismissed from consideration, but this may turn out to be an error. Port Arthur has been magnificently fortified and is impregnable to direct attack, but its strategic position is weak if Russia cannot maintain command of the sea, and it is said to be an open secret that the first objective of Japan will be the Russian fleet.

In the event of a great victory over the Russian naval force the next objective will naturally be the destruction of the Russian lines of communication and supply with Port Arthur along the Liao Tung peninsula. This task, it is suggested, will be intrusted to a Japanese army operating from a conveniently established military base there, while the Japanese navy will blockade Port Arthur and other Russian ports in the far east. The success of these operations will largely depend upon the celerity with which they are conducted, and not a little on the disposition, sympathy and assistance of the Chinese. Even should this movement succeed, however, the endeavor to prevent Russia from opening the line again would involve a long campaign in Manchuria, and the prosecution of such a campaign in winter so as to win any decisive success is well-nigh impossible.

As regards the opposing forces in Manchuria, it seems probable that while Russia has for months been rushing troops overland by way of the Trans-Siberian railway, she has been unable to place there all the troops she would like to have. The Japanese are well informed as to the Russian strength in Manchuria and will have a sufficient force to meet it at the outset. To carry on all the operations required over any long period, Japan will probably have to strain her resources to the utmost. In campaigning over the plains of Manchuria, Japan will, apparently, have the advantage over Russia, owing to the ability of the Japanese soldier to retain his fighting and marching vigor on what soldiers of other lands would consider a meager diet, and to carry as much as ten days' rations in his haversack. In spirit and stamina the Japanese soldier is a marvel and has been underrated by the Russians. The Russians are declared to be far superior to the Japanese as cavalymen; there seems little choice between them as regards the artillery, but the Japanese infantry and the staff departments, particularly as regards the commissary and transportation service, are said to be superior in efficiency. The chances, barring mistakes, would seem to be in favor of early Japanese successes, but in the long run the overwhelming numbers that Russia will be able to pour into Manchuria seem to preclude a continued Japanese occupation of that province unless the military leaders of the island empire should be able to turn the Chinese into soldiers.

FOR THE BETTERMENT OF AMERICAN SHIPPING.

Editor Marine Review:—In the present desperate condition of American ship owning and building for ocean commerce—not one deep sea keel has been laid in the United States since June 1, 1901—two measures for the immediate relief and encouragement of our shipping that have been favorably reported to congress deserve the friendliest support of thoughtful Americans. President Roosevelt's recommendation for a national merchant marine commission to study the decline of our shipping and devise a remedy has been embodied in the bill of Representative Gardner of Massachusetts now before the house. But this commission, when created, cannot complete its inquiry and report before next December. These two bills of which I speak can give some relief at once. One measure, senate No. 2,259, introduced by Senator Frye and approved by Senator Lodge's committee on the Philippines, reserves to American ships the carrying of American commerce with the Philippines. The other measure, senate No. 2,263, reserves to American ships the carrying of United States military and naval stores. Both of these bills are in strict line with historic national precedent. For more than a hundred years all water borne trade between one American port and another has been reserved to American vessels, and this policy has given our country the greatest and most efficient coastwise tonnage in the world.

This principle of American ships for American trade has been extended successively to Alaska, Porto Rico and Hawaii. It appears from a supreme court decision in the *Huus* case of Porto Rico that the principle would apply automatically on July 1 next to our commerce with the Philippines. The present bill confirms this, but for excellent reasons relieves for the present from our navigation laws the short voyage, interisland traffic of the archipelago—reserving to American ships the long voyage, dignified and important commerce between the Philippine ports and the Atlantic and Pacific ports of the United States.

The other measure, the government supply bill, is in exact accord with the practice of other maritime powers. Great Britain, France, Germany, etc., either by regulation or custom, reserve to the merchant ships of their own flag the carrying of their military and naval stores. Though a protectionist nation, the United States, strangely enough, until now has allowed this national service to be performed by cheap wage or subsidized foreigners.

Though both of these measures of such conspicuous national prudence have been favorably reported by the committees of congress to which they were referred, they are bitterly resisted by hostile influences centering in New York city. Those influences are, first and more important, the owners, agents or charterers of European ships, which now do nine-tenths of New York's ocean carrying, and naturally desire to monopolize all of it. The aggregate amount of our Philippines and government supply trade, as compared with the aggregate trade of foreign shipping, is not considerable. But these foreign influences fear these two bills as an "entering wedge" of American competition. They dread the effect on the American mind of the creation of an American steam service to the East Indies, where now the stars and stripes seldom appears. These foreign owners, agents and charterers are afraid that if American ship owners once gain a new foothold in ocean trade they will not stop until they have wrested most of it away from foreign ships, as has now been done in another field by our protected American manufacturers.

Strangely enough, a few of these protected manufacturers, within and without the cordage trust, on this issue of American shipping side with the foreigners against their own countrymen. These cordage makers draw raw material, manila hemp, from the Philippines, and they profess to believe that there are no American vessels to bring their fibre to the Atlantic coast, or that if there were American vessels their freight rates would be extortionate.

This whole question was thrashed out the other day before the senate committee on the Philippines. Of course, the foreign ship owners, who are most keenly interested, did not dare to show their heads. They work by more devious methods. But there were American ship owners there who testified that they had 100,000 net tons of steamships and 360,000 dead weight tons of sailing ships from which a fleet could be selected to convey the 80,000 tons of our entire import commerce from the Philippines. As to the matter of freight rates, these American ship owners also showed that the application of the coastwise principle to Hawaii had brought not an increase, but a decrease, of cost as a result of intelligent American competition.

George S. Dearborn, president of the American-Hawaiian Steamship Co., of New York, which owns a fleet of nine first-class American cargo ships, created by the similar Hawaiian legislation, stated to Senator Lodge that before this coastwise principle was applied it actually cost more money to bring Hawaiian sugar to New York by sail than it does now to bring it by steam. The same lessening of rates is also true of our reserved American shipping trade with Porto Rico. Before the historic national principle of American ships for American commerce was applied to our insular possessions, no American steamships ran from New York to either Porto Rico or Hawaii. Now there is a regular service of some of the finest and most efficient steamships in the world. This is what protection has wrought for our ocean trade with Porto Rico and Hawaii. This is a fair augury of what may be expected in the Philippines. The objection which has been urged by foreign, and a few domestic, interests against this Philippines legislation and against the government supply bill, is the familiar free trader's remonstrance against protectionism of any kind. However it may be with the foreign ship owners, this certainly comes with ill grace from American cordage manufac-

turers, whose industry has been created by a generous tariff on their products, and whose industry is further and especially favored in the remission of the Philippine export duty on their raw material, denied to the competing manufacturers of Europe.

There has probably never been a more startling exhibition of cynical selfishness in the whole century-old tariff debate than that given the other day by those rich manufacturers of cordage in their appearance before the senate committee on the Philippines to protest against this measure of protection to American ship owners, who, unprotected, have been almost driven off the seas.

If there is any wisdom, in the American system, as the Republican party for forty years has upheld it, here is an opportunity to invoke this not only for the encouragement of American ship owners, builders and seamen at home, but for the safeguarding of our long line of communication with our East Indian dependencies. What would happen to American commerce, to the American army and to our whole American interests in the Philippine archipelago if this black eastern war cloud swept out of our service over night the foreign ships that now maintain the whole transportation between New York, Boston and Manila?

Would England leave to French or German ships the maintenance of her communication with India, South Africa or Australia? To ask this question is to answer it. And yet England has no more at stake in India, South Africa or Australia than America in the Philippines.

WINTHROP L. MARVIN.

Boston, Jan. 28, 1904.

JAPANESE CRUISERS KASUGA AND NISSHEN.

Two cruisers, purchased from the Argentine government by Japan when they were being completed at an Italian ship yard, are now on their way to Japan. These vessels were ordered early in 1902 from the firm of Messrs. G. Ansaldo & Co., Sestri Ponente, and were named the *Rivadavia* and *Moreno* by the Argentine government when a state of antagonism existed between the neighboring republics of Chili and Argentina. Like the two Chilean battleships *Libertad* and *Constitucion*, these vessels were to be hurried forward lest war might break out; but with peace ratified between the two states there has been a relaxation. Since Japan decided to purchase the two Italian-built vessels, about three weeks ago, most remarkable work has been done towards the completion of the ships, principally by the firm of Sir W. G. Armstrong, Whitworth & Co., who are responsible for the armament.

The two ships belong to what is now known as the "Garibaldi" class, the first of which was laid down for the Italian government, but was bought for Argentina. The second was similarly purchased by the Spanish navy, when trouble arose with America over the Cuban revolt. The third vessel, also laid down for Italy, was purchased by Argentina; but the fourth, the *Giuseppe Garibaldi*, belongs now to the Italian navy. Now we have the two Argentine ships bought for the Japanese navy, so that of the six ships only one has ultimately been completed for the navy for which she was laid down. Each successive ship marked an improvement on her predecessor, and the drawings which we reproduce will be regarded with considerable interest. The dimensions are: Length (extreme), 357 ft. 2 in.; length between perpendiculars, 344 ft.; total width, 61 ft. 10½ in.; depth (moulded), 40 ft.; draught aft, 25 ft. 3.15 in.; draught amidship, 24 ft. 1.37 in.; draught forward, 23 ft.; displacement on above draught, 7,632 tons; full power of machinery, 13,500 I. H. P.; designed speed, 20 knots; total coal carrying capacity, 1,150 tons; radius of action at 10 knots speed, 5,000 nautical miles.

The armor protection has been manufactured at the Terni Steel Works, and has been hardened by the latest process. There is a central armored redoubt, which extends for about half the length of the ship, the belt being 150 millimeters (5.9 in.) thick at the sides, and the athwartship bulkhead plates 120 millimeters (4.7 in.) thick. Forward and abaft the redoubt there is a belt extending 1½ meters above and below the water line, of a thickness commencing with 150 millimeters (5.9 in.), and diminishing to 80 millimeters (3.1 in.) at the extreme ends. The armored deck over the redoubt is formed of two plates, with a total thickness of 40 millimeters (1.6 in.), and beyond this it is of 20 millimeters thickness.

The armament in the two new ships differs slightly. In one ship there is a single 10-in. gun mounted in the forward barbette, with two 8-in. guns in the aft barbette; while in the other vessel a pair of 8-in. guns are mounted both in the forward and aft barbette. Otherwise the armament is the same, and includes fourteen 6-in. guns protected by the citadel armor—five on each broadside on the main deck, and four mounted on the upper deck at the four corners of the citadel. There are four of these quick-firing guns to fire both fore and aft in line with the keel. There are also ten 3-in. guns, six 1.85-in. guns, two Maxims, and four torpedo-launching tubes in each ship. These tubes are above water and within the armored citadel. There are two main magazines, situated directly under the fore and aft barbets, and four for the secondary guns—two being in the center of the vessel and one forward and one aft. The propelling machinery is of 13,500 I. H. P., and has been constructed at Messrs. Ansaldo & Co.'s works at Sampierdarena, and is designed to give a maximum speed of 20 knots. The electrical plant is considerably more powerful than has hitherto been fitted in vessels of this class, there being three large dynamos placed forward under the protective deck, and two others for general use on the upper deck amidships. The electrical current is used not only for lighting and search-

light purposes, but for the training gear of guns, for night-sights, for firing the guns, for the ammunition hoists, for driving tools in the workshop, and for speed and direction indicators connected with the main engines. One of the vessels was launched in October, 1902, and the other in March of last year, and they were completed and left Italy for the east last week. They have been renamed Kasuga and Nisshen.

ANNUAL MEETINGS OF STEAMSHIP COMPANIES.

The annual meeting of the Detroit & Cleveland Navigation Co. and the Detroit & Buffalo Steamship Co. were held last week with the largest number of stockholders in attendance in many years. While no figures were given out, it was announced that the season of 1903 was most successful for both lines. The freight earnings of the Detroit & Buffalo Line were just double what they were in 1902, and the passenger traffic showed an increase of 20 per cent. over that of the previous season. A resolution was offered by ex-Senator T. W. Palmer, who is one of the stockholders, commending the officials on their efficient management of the affairs of the lines.

The Detroit & Cleveland Line elected officers as follows: President and general manager, W. C. McMillan; vice president, James McGregor; treasurer, Hugh McMillan; secretary, P. H. McMillan; assistant treasurer, B. C. Wilder; auditor, George M. Black; general superintendent, A. A. Schantz; general freight traffic manager, D. C. McIntyre; board of directors, W. C. McMillan, James McGregor, Hugh McMillan, George Hendrie, P. H. McMillan, A. A. Schantz.

Following are the Detroit & Buffalo Line officials: President, George Hendrie; vice president, T. F. Newman; treasurer and general manager, W. C. McMillan; secretary, B. C. Wilder; assistant treasurer, George M. Black; general superintendent, A. A. Schantz; general freight traffic manager, D. C. McIntyre; board of directors, George Hendrie, T. F. Newman, W. C. McMillan, A. C. Angell, F. S. Masten, C. Morris, A. A. Schantz, D. C. McIntyre, B. C. Wilder.

At the annual meeting of the directors of the Cleveland & Buffalo Transit Co., held last week, all the old officers were re-elected. They are: President, M. A. Bradley; vice president, George W. Gardner; treasurer, R. C. Moody; secretary and general manager, T. F. Newman. No statement regarding the earnings of the company for the past year was given out, but the officers were pleased with the showing made.

The annual meeting of the other companies at Detroit resulted as follows:

Duluth & Atlantic Transportation Co.—Hugh McMillan, president; W. C. McMillan, vice-president; Philip McMillan, secretary; George M. Black, treasurer. Directors, the above and W. K. Anderson.

White Star Line—A. A. Parker, president; L. C. Waldo, vice-president; John Pridgeon, Jr., treasurer; C. F. Bielman, secretary and traffic manager; B. W. Parker, general manager. Directors, the above and T. H. Newberry, James H. Muir, Robert T. Gray and A. W. Colton.

Nipigon Transit Co.—Alfred K. Kiefer, president; David Milne, vice-president; O. L. E. Weber, secretary and treasurer.

Michigan Navigation Co.—William Livingstone, president, treasurer and general manager; T. W. Palmer, vice-president; W. A. Livingstone, secretary.

Percheron Navigation Co.—T. W. Palmer, president; William Livingstone, treasurer; W. A. Livingstone, secretary.

Adams Transportation Co.—John Craig, Sr., president; John Adams, vice-president; John Craig, Jr., secretary; Thomas Adams, treasurer and general manager. Directors, above and Geo. L. Craig.

Monroe Transportation Co.—John Craig, Sr., president; John Adams, vice-president; John Craig, Jr., secretary; Thomas Adams, treasurer and general manager. Directors, above and Geo. L. Craig.

Whitney Transportation Co.—D. C. Whitney, president and treasurer; John Dalvell, vice-president; Fred G. Austin, secretary. Directors, above and Charles Stinchfield and Richard Cuson.

Wolverine Steamship Co.—John B. Roby, president; Watson M. Freer, vice-president; Alex. McVittie, secretary, treasurer and manager. Directors, above and Frank J. Hecker.

Michigan Steamship Co.—Frank J. Hecker, president; Frank E. Kirby, vice-president; Alex. McVittie, secretary, treasurer and manager. Directors, above and Watson M. Freer and P. H. McMillan.

American Steamship Co.—Hugh McMillan, president and treasurer; W. C. McMillan, vice-president; M. B. McMillan, secretary. Directors, above and M. W. Aldrich and G. M. McMillan.

Northwestern Transportation Co.—Harvey H. Brown, president; S. E. Hartnell, vice-president; L. C. Waldo, secretary, treasurer and manager. Directors, above and C. T. Pratt and Stephen Hartnell.

Roby Transportation Co.—John B. Roby, president; John W. Duddleson, vice-president; L. C. Waldo, secretary, treasurer and manager.

Stewart Transportation Co.—George Peck, president; A. E. Stewart, vice-president and general manager; C. F. Bielman, secretary and treasurer. Directors, above and J. H. Barlum and George Leshner.

J. Emery Owen Transportation Co.—J. F. Owen, president;

Wm. J. Gray, vice-president and treasurer; Robert T. Gray, secretary.

Inter-Lake Transportation Co.—P. J. Ralph, president; C. D. Waterman, vice-president; H. C. Ralph, secretary and treasurer.

Ionia Transportation Co.—F. M. Thompson, president and treasurer; E. L. Thompson, vice-president; W. M. Kelly, secretary.

Teagan Transportation Co.—W. T. Teagan, president; J. O. Teagan, treasurer and general manager; Wade Mills, secretary.

Hope Transportation Co.—T. S. Christie, president; C. D. Haywood, vice-president; W. R. Stafford, treasurer; Thos. K. Christie, secretary; John A. Francombe, manager.

Wayne Transportation Co.—John A. Francombe, president and manager; W. G. Teuson, secretary; E. McWilliams, treasurer.

Vulcan Transportation Co.—J. B. Baugh, president; S. A. Baugh, vice-president; James Findlater, secretary and treasurer.

TURBINE YACHT LORENA.

The steam yacht Lorena, said to be the largest ocean-going turbine propelled yacht afloat, is owned by Amzi L. Barber, of the New York yacht club. She was built for him from the designs of Cox & King by Ramage & Ferguson, of Leith, and it is likely that she will be seen in New York waters in the yachting season of 1904. The principal dimensions of the Lorena are: Length over all, 300 ft.; length on load water line, 253 ft.; breadth molded, 33 ft. 3 in.; depth, 20 ft. 3 in.; tonnage (yacht measurement), about 1,406. The turbine propelling machinery was supplied by the Parsons Marine Steam Turbine Co., Wallsend-on-Tyne, and consists of three independent Parsons' compound steam turbines—one high-pressure turbine and two low-pressure turbines, each turbine driving separate shaft, with one propeller on each shaft. Reversing turbines are incorporated in the exhaust casing of each of the low-pressure turbines, and the outer shafts are capable of being worked ahead or astern independently of each other and of the high-pressure turbine, thus giving the vessel quick and powerful maneuvering ability. Steam is supplied by four cylindrical boilers, working at a pressure of 180 lbs.

The Lorena ran her official trip at Aberlady, in the Firth of Forth, on May 16. On the best run a speed of 19 knots an hour was obtained in slack water, the mean number of revolutions of the center shaft being about 550 a minute and of the wing shafts 700 a minute. The bearings revolve in oil, thus reducing friction to a minimum, and by an economical arrangement the oil is pumped from one end of the turbine to the other, the consumption of oil being only about 5 per cent. of that for reciprocating engines. A very noticeable point was the entire absence of vibration.

From the observations taken on the trial trip, as also from data since obtained, it is found that the Lorena is a very economical vessel as regards coal consumption. When the Lorena went from Brightlingsea to Southampton she made the passage at an average speed of 12.4 knots. She burned only one ton of coal an hour, with all auxiliaries going. This speed was maintained on two boilers, in the face of a foul tide.

SPAIN TO AID ITS SHIPPING.

Spain is the latest of the nations to come to the aid of shipping. A bill extending government assistance to shipping and ship building has recently been read before the Spanish cortes. Following is a summary of the measure:

Article I. provides that vessels of every kind measuring over 300 registered tons (1 ton—2.83 cubic meters) are exempted from all import duties. Smaller craft, however, up to and including 300 tons measurement, are to pay a duty of 40 pesetas per ton register if imported from countries having a treaty of commerce with Spain, and a duty of 48 pesetas per ton if imported from non-treaty countries. Article II. exempts from duty all work performed on Spanish vessels in foreign ship yards, whether the said work consists of simple repairs, renewal of machinery, or an extension of their carrying capacity. Article III. exempts from duties the materials, machinery and apparatus imported from abroad for the purpose of building and equipping both foreign and national vessels, on proof being furnished in the prescribed form of the destination of the said materials, etc. This exemption from duty can only be claimed by the actual owners of the vessels or by their legally appointed representatives. Article IV. grants to Spanish ship owners, or to their representatives legally appointed for the purpose, the following premiums for vessels built in Spanish yards or arsenals, namely: 40 pesetas per registered ton for ships with wooden hulls, 60 pesetas per ton for ships with hulls of iron or steel or of mixed construction, 15 pesetas per 100 kilograms for machinery and boilers of vessels of any class propelled by steam. These premiums will only be paid under the annexed conditions: (1) The ships must be built, fitted out, and manned either in the ship yards of the peninsula or those of the Balearic islands; (2) the ships must be of a measurement exceeding 130 registered tons; (3) the ships must be declared by the ministry of marine to be suitable for all kinds of navigation on the high seas. Article V. deals with the method of ship measurement; Article VI. lays down rules for sanitary-police inspection; Article VII. reduces consular fees; and Article VIII. provides that the coasting trade remains reserved exclusively for the Spanish flag.

ITEMS OF GENERAL INTEREST.

Mr. Henry Phipps has been chosen as a director of the United States Steel Corporation, vice John D. Rockefeller, resigned. Mr. Henry W. Oliver of the Oliver Iron Mining Co., now a part of the United States Steel Corporation, died at Pittsburgh last week.

A lightship is to be stationed off the outer bar at Brunswick, Ga., and a bill has passed the senate to appropriate \$90,000 for its construction.

A bill has passed the senate authorizing the secretary of the treasury to acquire a suitable site upon which to establish a depot for the revenue cutter service.

A revenue cutter of the first class is to be stationed at Honolulu, and a bill appropriating \$225,000 for its construction has passed the senate. A similar sum was appropriated for a revenue cutter for service in Narragansett bay.

The great passenger and freight steamer Dakota, sister of the Minnesota, was launched at the yard of the Eastern Ship Building Co., New London, Conn., last Saturday. She is being built for the Great Northern Steamship Co. The Dakota and Minnesota are the largest carrying craft ever built in the United States. Miss Mary Flemington of Ellendale, S. D., named the Dakota.

The steamer City of Savannah, building at Roach's ship yard, Chester, Pa., for the Ocean Steamship Co. of Savannah, was launched last week, Miss Maud Pierpont Burnett naming the steamer. The City of Columbus is 396 ft. over all, 370 ft. on the water line, 49 ft. beam and 27 ft. deep. She will be equipped with triple-expansion engines 38, 46 and 75 in. cylinder diameters by stroke of 48 in., and steam will be supplied by four single-end boilers, 14 ft. 9 in. in diameter by 10 ft. 6 in. long. She will go into commission within three months.

In a communication to congress regarding the relative progress of construction upon the battleships Connecticut and Louisiana, Acting Secretary Chas. H. Darling reports that so far \$810,301.17 has been expended upon the Louisiana, building at the yard of the Newport News Ship Building & Dry Dock Co., Newport News, Va., and \$493,760.12 upon the Connecticut, building at the New York navy yard. This is a very graphic representation of the energy with which a private ship yard works and the deliberation with which a navy yard goes about its business.

Three new steamers building for the United Fruit Co. of Boston at Belfast, Ireland, are a distinct departure from anything running to Boston. Each will be equipped with refrigeration plants to deliver cargoes in first-class condition. The company's steamer Venus was fitted for experimental purposes and pronounced a success. The first will be delivered the middle of June, others following at intervals of four weeks. They will be larger than the present fruiters, their length being 330 ft., beam

44 ft. 3 in., gross tonnage 4,500. They will carry triple-expansion engines and are to run between Costa Rica and Boston in eight days.

Representative Hill of Connecticut has offered a bill in the house of representatives authorizing the secretary of the navy to contract for submarine boats at a cost not to exceed \$1,000,000. The bill contains the provision that no types will be considered and no design accepted other than those submitted by persons or corporations who have heretofore built a successful boat of the same type in this country. The purpose of this bill is evidently to encourage a monopoly in the construction of submarines. It would be all right, of course, not to accept a design whose practicability had not been demonstrated by successful trials, but there is absolutely no excuse for the provision that no new types should be considered. It is only by ceaseless experiments that progress can be made upon any line, and surely the present types of submarines have not reached such a state of perfection that no new types ought to be considered.

TRADE NOTES.

The firm of Hardy & Dischinger of Toledo, dealers in oils and supplies, has been changed to an incorporated company under the title of the Hardy & Dischinger Co.

Matteson & Drake of Philadelphia have been appointed the sole Atlantic coast agents for the Mulholland hatch fastener, which has attained such popularity on the lakes.

The Chase Machine Co. of Cleveland have acquired the sole right to manufacture and sell in the United States and Canada the Kimball steam turbine invented by Dr. Duston Kimball of Bucyrus, O.

It is a matter of regret that Mr. F. Merriam Wheeler, manager of the marine department of the George F. Blake Mfg. Co., has determined to retire on account of ill health. He contemplates a long trip abroad in the hope of re-establishing his health. Mr. Wheeler has been with his company for thirty-four years and in that time has brought out many improvements in his line for marine use.

It is a well-known fact that every industry of any importance considers it necessary for those engaged in it to get together once a year, or oftener, compare notes and see how they can best improve their business. The stove manufacturers not long since held a convention of men from all parts of the country and after considering the opinions of all present it was declared that steel was as good as wrought iron for making ranges but that neither was as good as cast iron. The fact that cast or malleable iron is the standard material for making a ship range adopted by the Stamford Foundry Co. in the manufacture of their famous Shipmate ranges, certainly places them in the front rank of desirable ranges.

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English Royal Navy	-	-	-	-	-	-	-	929,300	"
Russian Imperial Navy	-	-	-	-	-	-	-	227,500	"
Japanese Imperial Navy	-	-	-	-	-	-	-	122,700	"
Austrian Imperial Navy	-	-	-	-	-	-	-	56,700	"
Italian Royal Navy	-	-	-	-	-	-	-	13,500	"
Chilian Navy	-	-	-	-	-	-	-	26,500	"
Argentine Navy	-	-	-	-	-	-	-	13,000	"
The "Messageries Maritimes" Company	-	-	-	-	-	-	-	87,600	"
Chemins de fer de l'Ouest: (The French Western Railway Co.)	-	-	-	-	-	-	-	18,500	"
plying between Dieppe and Newhaven	-	-	-	-	-	-	-		
Total Horse Power of Boilers in Use	-	-	-	-	-	-	-	1,850,860	

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In his report to the house, in favor of the bill authorizing a commission to consider the question of ship subsidy, Chairman Grosvenor, of the committee on merchant marine and fisheries, says that of almost a billion dollars' worth of exports to Europe during the fiscal year 1902, only 1¾ per cent. was carried in American vessels. Of nearly \$500,000,000 of imports during that year, American ships carried only \$30,000,000 worth. For the carrying of that trade, Gen. Grosvenor says we paid \$200,000,000, which amount, he maintains, should have gone into the pockets of Americans.

Mr. Samuel S. Sewall of the ship building firm of Arthur Sewall & Co. of Bath Me., testified before the senate committee on the Philippines the other day that his ships could not compete against foreign subsidized vessels even in the carrying of American government supplies from the Pacific to the Philippines. That British steamers were last summer loading lumber for the Philippines at Tacoma, with American ships lying idle in the harbor. Protection for our shipping industry is just as necessary as for factories.

Till we get American ships we shall probably be obliged to content ourselves with a paltry 6 per cent. of Africa's trade and 10 per cent. of the South American business. Large opportunities await us in South America, Africa and the Orient, but until American goods can be carried at American freight rates in American ships, we shall not receive more than a fraction of the benefits those opportunities offer, even though the American isthmian canal be constructed in the meantime. Asia and Oceania alone have an import trade of \$2,000,000,000 yearly, but our share in that vast trade is only half as much as our purchases therefrom. We buy from South American countries three times as much as we sell them. It ought to be the other way round.

The delay in trans-shipping goods in London to Persian liners seriously militates against American trade in Persia. Our goods should go in American ships direct to ports on the Persian gulf. Freight at \$5 a ton from London to the Persian gulf ports means about \$8 a ton on American goods shipped via English ports.

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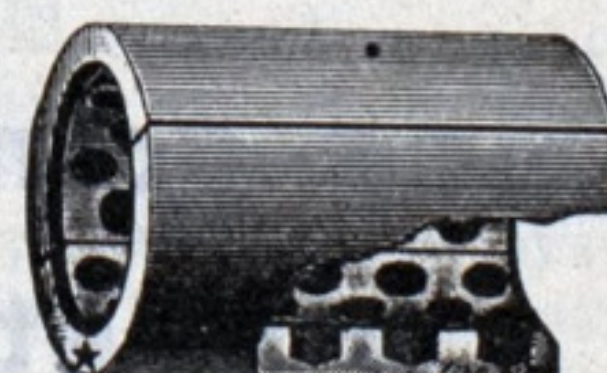
Schenectady, N. Y., Feb. 10.

SECRETARY MOODY FAVORS THE HALE BILL.

Secretary Moody made a statement to the house committee on naval affairs during his recent testimony on the naval appropriation bill to give discretion to the president, the secretary of the navy or the secretary of war as to the employment of foreign ships in the transportation of supplies between the United States and the Philippines after July 1 next, when the coastwise laws become operative and exclude foreign vessels from this trade. "If the bill proposed by Senator Hale becomes a law," said Secretary Moody, "we shall have no difficulty. The bill in one section confines the shipment of stores to vessels of the United States and in another permits the president or the secretary of the navy to suspend the operation of the act whenever public interest requires. There will be no difficulty in getting along all right if that measure should become a law. I sympathize with the idea that we ought to transport our stores with American vessels, even if it costs more, but at the present time we cannot do it, for we are bound to give the transportation to the lowest bidder and American ships cannot compete with foreign ships. The result is that most of the transportation is in foreign bottoms. I would like some such bill as is proposed by Senator Hale to become law. That would enable me to transport stores in American bottoms, no matter if the American bottoms are the highest bidders. But the bill permits the selection of foreign bottoms when national interests require. If the bill becomes a law we can take care of the transportation of American stores to the Philippines."

BLOCKS FOR STEAMSHIP DAKOTA.

Probably some conception of the mammoth size of the steamship Dakota launched from the yard of the Eastern Ship Building Co., New London, Conn., for the Great Northern Steamship Co. on Saturday last may be gathered from the details of the blocks required for the Dakota and her sister, the Montana. Although these vessels carry no sails they require in blocks four times the amount required for an ordinary sailing vessel; this means in weight 20 tons of blocks for each ship. These blocks are made of special design, the cargo blocks being constructed of steel and having a capacity of from 40 to 60 tons each. The specification calls for some of the most approved designs and patented articles now used in the highest class of marine construction. Star metaline bushed sheaves have been specified for on the cargo hoisting blocks and roller bushed sheaves for the lighter work. They also specify the standard automatic releasing hooks to be used for the lifeboats, these being the hooks adopted by the United States government. Accompanying this article is an illustration of a Star metaline bushing which goes in the sheaves.



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